REPORT OF THE AD HOC COMMITTEE ON ENVIRONMENTAL HYPERSENSITIVITY DISORDERS

AUGUST, 1985

Ontario

Judge's
Chambers

Cabinet
du Juge

Provincial Court
(Family Division)

Cour provinciale
(Division de la famille)

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of York

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Dear Mr. Minister:

Enclosed with this letter is the report prepared by the Committee on Environmental Hypersensitivity Disorders established by your ministry and on which I sit as chairman.

It is our hope that we have addressed all of the issues that were assigned to us. While the size of the task proved to be much larger than we had anticipated, we have found this a very valuable and challenging experience.

We would appreciate very much having the opportunity to meet with you to discuss our findings and recommendations, once you and other persons within the ministry have had a chance to review the report.

Yours very truly,

Judge George M. Thomson
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Table of Contents

Introduction 1

Chapter One - Activities of the Committee 6

Chapter Two - Environmental Hypersensitivity 13

- Environmental Hypersensitivity Disorders 13
- Environmental Hypersensitivity: Description 13
- Terminology 14
- Symptomatology 14
- Diagnostic Methods 16
- Working Definition 17
- Environment as a Cause of Environmental Hypersensitivity 18
- Theories of Causation 20
- Clinical Ecology 20
- Concepts of Clinical Ecology 21
- Adaptation-addiction 21
- Major Theories of Causation 22
- Factors That Modify Adverse Reactions to Environmental Hazards 23
- Individual Uniqueness 24
- Dose 27
- Interactions Among Environmental Agents 30

Assessing Some Major Theories, Beliefs and Practices in Clinical Ecology 32
Major Theories Without Significant Experimental Support 32
Fungal Infections as a Factor in Environmental Hypersensitivity 34
Some Preliminary or Controversial Research Findings Relevant to Theories and Practices of Clinical Ecology 35
Neutralization Treatments 35
Allergic Reactions Fundamental to the Development of Environmental Hypersensitivity 36
Somatopsychic Causation of Behavioural Problems Associated with Environmental Hypersensitivity 39
Viral Infections as a Factor in Environmental Hypersensitivity 42
Food Allergy as a Cause for Many Disease Conditions 44
Migraine 44
Rheumatoid Arthritis 45
Alternative Explanations for Environmental Hypersensitivity 48
The Premenstrual Syndrome 48
Hyperventilation 49
Hypoglycemia 49

The APICH Syndrome 50
Electromagnetism 50
Iatrogenic Illness 51
Psychosomatic Illness 51

Chapter Two - References 53

Chapter Three - Present Knowledge of Adverse Reactions to Environmental Agents 70

70

Introduction 70
Widely Accepted Disease Reactions 70
Immunologically-Mediated Reactions 70
Type I Reaction (Immediate Or Anaphylactic) 71
Type II Reaction (Cytotoxic) 73
Type III Reaction (Immune Complex-Mediated) 74
Type IV Reaction (Delayed Hypersensitivity) 75
Type V Reaction (Antireceptor) 76
Type VI Reaction 77
Non-Immunologically Mediated Reactions 77
Reactions To Food Components Including Additives 77
Pharmacological Reactions 77
Toxic And Cancer-Producing Reactions 78
Idiosyncratic Reactions 79
Psychogenic Reactions 80

Reactions To Drugs And Other Chemicals Not Primarily Found In Foods 81
Nonspecific Irritant Actions 82
Specific Toxicologic And Cancer-Producing Actions 83
Production Of Pathologic Sequelae 85
Ionizing Radiations 86
Widespread, Recognized or Potential Environmental Hazards 87
Cigarette Smoke 87
Food Additives 90
Fluoride 92
Formaldehyde and Urea Formaldehyde Foam Insulation (UFFI) 93
Acid Rain 96
Video Display Terminals (VDTs) 98
Summary 99

Chapter Three References 103

Chapter Four -

Clinical Ecology - Programs Visited 112

Chapter Five -

Patient Submissions 121

Chapter Six - Diagnostic Methods 143

Observations From Site Visits 143

Summary of Literature Reviewed 144

Diagnostic Methods That Were Considered 145

Blood Tests for Trace Substances And Nutrients 153

Challenges 155

Indoor Air Quality Measurements 158

Controversial Tests Used by Clinical Ecologists 160

General Comments 169

Chapter Six References 178

Chapter Seven - Treatment Methods 186

Treatment Methods 186

General Patient Care 186

Chronic Patient Care 187

Dietary Manipulation 189

Elimination Diets 189

Rotary Diversified Diet 189

Vitamin and Mineral Supplements 191

Pure Foods and Water 191

The Rinkel Method 192

The Provocation-Neutralization Method 193

Assessment of Allergy Extract Therapy 195

Treatments for Candida 199

Acute Patient Care 201

Treatments for Acute Reactions 201
Vitamin C Injections 201
Naloxone 203
Extract Therapy 203
Miscellaneous Treatments 203
Environmental Control Units 204
Rarely Used Treatment Methods 206
Transfer Factor 207
Tissue Extracts 208
Vitamin and Mineral Therapy - Megadoses 209
Thyroid Therapy 210
Kelly Method 210
Mercury Amalgam Fillings 211

Chapter Seven References 213

Chapter Eight - Conclusions and Recommendations 224

Conclusions 224
Prevention and the Environment 224
Existence and Prevalence of Environmental Hypersensitivity 226
Medical Approaches to Environmental Hypersensitivity 238
Tests Used by Clinical Ecologists 246
Treatments Used by Clinical Ecologists 248
The Patients 250
General Information 256

Positions Taken by Relevant Associations 260

The Professional Debate 266

Recommendations 269

Prevention 269

The Funding of Tests and Treatments 279

Factors that Support Public Funding 285

Factors that Support Exclusion 286

Controls on Tests and Treatments 297

Information 298

Patient Supports 302

Inter-Disciplinary Dialogue 309

Chapter Eight References 312

Introduction

The Committee on Environmental Hypersensitivities was established in November, 1984 at the request of the then-Minister of Health for the Province of Ontario, Keith Norton. (Letter, Appendix 1.)

The terms of reference set out by the Ministry required the Committee to review current published case studies and visit appropriate treatment centres in order to report on the present level of knowledge about environmental hypersensitivity, paying particular attention to prevalence, to methods of diagnosis and methods of treatment. Further, the Committee was asked to outline possible approaches to investigating, treating or undertaking further research into such disorders.

The report has been designed as follows:

Chapter 1 summarizes the Committee's activities.

Chapter 2 attempts to define the disorder and to summarize theories of causation put forward by those who believe environmental hypersensitivity is an existing and a growing problem. Alternative explanations for the illness are also described;

factors that modify adverse reactions are discussed. In addition, we comment on which theories of causation are worthy of further investigation.

Chapter 3 outlines present fundamental knowledge about the nature of adverse reactions to food, to chemicals and to other environmental agents known to have an adverse effect on human beings. The extent and limitations of our knowledge about selected, wellknown agents are described.

Chapter 4 contains general observations we made after visits to environmental units and to individual clinical ecologists.

Chapter 5 summarizes and comments on the information the Committee received from patients, their families and friends and from the people who deal with patients; this information comes from a number of meetings with individual patients and from many briefs, letters and phone calls received by us over the past six months.

Chapter 6 describes various testing procedures that are used with patients and it summarizes the existing literature on these procedures.

Chapter 7 describes treatment procedures and the literature relating to them.

The first part of Chapter 8 sets out the Committee's findings and the second part its recommendations.

In order to ensure that the report is genuinely useful in any future Ministry initiatives related to environmental hypersensitivity, it is necessary to establish the context in which it was produced and to point out those factors that limited the Committee's operations. Among them:

First, there is a lack of unanimity within the medical community with regard to the matters the Committee was asked to study. For example, we found that even defining the term "environmental hypersensitivity" brought a range of answers, many of them contradictory.

Second, there is a lack of consensus about testing methods used to establish a diagnosis and about patient management once a diagnosis has been made.

Third, there is a broader range of tests and treatments than is generally believed. (A list of some of these tests and treatments, taken from submissions made to us by patients, is included as Appendix 4). Despite the fact that many sufferers said they had been helped by persons in such diverse fields as naturopathy, acupuncture, chiropractic, massage therapy, kinesiology, irridology and electromagnetic therapy, these approaches could not be analyzed and evaluated by the Committee in the time available to us. Rather, we focussed on a relatively small number of tests and treatments that are used regularly by clinical ecologists in Ontario or that are used elsewhere and likely to be adopted here at some time in the future.

Fourth, it was not possible for the Committee to engage in any independent research on tests and treatments.

Fifth, the area under consideration changes very rapidly -- a fact that became clear in the six months of the Committee's work. It would therefore have been unrealistic for a small, temporarily constituted group to expect to keep current in the field in more than a limited way. Our report, therefore, is based on what we observed at the specific time we observed it and it should be understood in that context.

An increasingly significant issue that became evident as the Committee met and deliberated was that of patient access to non-medical support services. Although the Ministry of Health confirmed that consideration of the problem was not directly within our mandate, it suggested we make recommendations about further study if we felt they were necessary. We were unable to consider the issue in depth, but we did find that there is a definite need for patient support services for people diagnosed as environmentally hypersensitive and that this need is inextricably linked to the medical response to the illness; as a result, we have decided to offer both our findings and recommendations on this matter.

By the time our deliberations were complete, each of us had an increased sense of urgency about the effect of the environment on human health, though it is not possible to express those concerns except in a general way. Many of the professionals we spoke to and the members of the public who approached us share our sense that there is a link between consideration of environmental hypersensitivity and larger environmental issues.

It is within these limits that the Committee shaped its work and the recommendations that follow. We trust that the Ministry of Health will find that our report sets the stage for further research, that it will be helpful to the Ministry and, therefore, to the people of Ontario.

Chapter One

Activities of the Committee

In order to provide a comprehensive and balanced report on a complex issue, and in spite of the short time alloted for its study, the Committee attempted to hear the views of all interested persons -- patients, their parents and their other relatives, their friends, professionals within the field of environmental medicine and experts working in related fields.

1. Committee Meetings

Members of the Committee spent 13 full days meeting to plan, carry out their work, evaluate the research and the results of their observations and, finally, to discuss their conclusions and recommendations.

2. Advertising

The Committee placed newspaper ads in sixteen newspapers across Ontario, inviting briefs, letters and submissions from any interested parties; the Committee reviewed selections of these, while the Chairman reviewed them all, a total of 1,209. (Appendix 3).

3. Meetings with Groups

In addition, the Committee met with the following groups:

* the Ad Hoc Committee on Environmental Hypersensitivities, December 17, 1984;

* ten representatives of the Canadian Society for Clinical Ecology and Environmental Medicine, under the chairmanship of Dr. John McLennan, February 7, 1985;

* four representatives of the Parents of the Environmentally Sensitive, December 17, 1984. The group, which is headed by Mrs. Margaret Nikiforuk, met with Judge Thomson separately on another occasion;

* Drs. Howard Langer and Norman Epstein, representing the Ontario Allergy Society, April 3, 1985.

4. Meetings with Individuals

The Committee met with the following individuals:

* Dr. Z. Jancelewicz, Chairman of the Allergy Division of the Ontario Medical Association, February 8, 1985;

* Dr. William Chodirker, an allergist at the University Hospital, London, February 8, 1985;

- Dr. Donna E. Stewart, Assistant Professor of Psychiatry, University of Toronto, March 7, 1985;

- Dr. David Roy, Director of the Biomedical Research Institute, Montreal, April 26, 1985;

- Bruce Small, a consultant on environmental issues, December 17, 1984;

- Susan Daglish, executive director of the Allergy Information Association, February 7, 1985;

5. Meetings with Physicians (in Canada)

Committee members also met in Toronto with people in various disciplines related to the topic of study. On March 2, 1985, Judge Thomson, Drs. McCourtie and Woodward met with Dr. Jonathan Brostoff, Professor of Clinical Immunology and Director of a research laboratory of the National Health Service, London, England. Drs. Evers and McCourtie held a meeting on March 26, 1985, with Dr. S. M. Singh, Associate Professor of Genetics at the University of Western Ontario; Dr. Day and Judge Thomson met with Drs. I. Leonard Bernstein and Jordan Fink, respectively the current and past presidents of the American Academy of Allergy and Immunology, on March 30, 1985; Dr. Evers met with Drs. Gordon Nikiforuk and M. Krondl of the Ad

Hoc Committee on Environmental Sensitivities on April 27, 1985.

Drs. McCourtie and Woodward spent February 6, 1985, observing the practice of Dr. J. Krop, a clinical ecologist in Toronto. In Ottawa on March 9, 1985, Dr. Day and Judge Thomson observed Dr. L. Gilka in her practice and talked with several of her patients; on that day, they also met with Dr. J. Molot, with certain of his patients in his office, as well as with Drs. Lynn Marshall and John Coombs. Later, the two Committee members met with several persons who had expressed professional or personal interest in the problems under discussion.

6. Meetings with Physicians (U.S.)

On January 16, 1985, all members of the Committee (excepting Dr. Evers) met with Dr. John Crayton, a Chicago psychiatrist involved in research into environmental hypersensitivity; the following day, they met with Dr. Theron Randolph of Chicago, Illinois at his environmental unit and, on January 18, 1985, spent the day with Dr. William Rea and his staff in Dallas, Texas, discussing their work and research.

On May 2 and 3, 1985, Drs. Day, Evers and Gerrard held meetings in San Francisco with the following professionals who are involved in research, clinical practice or both: Drs. Donald Jewett, Iris Bell, Alan S. Levin, Phyllis Saifer, Carroll Brodsky, Abbe Terr, Piero Mustacchi and David S. King.

7. Conferences and Meetings

In addition to these discussions, members of the Committee attended conferences and meetings of associations involved in relevant areas of study: on February 25, 1985, Dr. McCourtie went to the National Research Council meeting on Indoor Air Pollution; Drs. Day, Gerrard and McCourtie held discussions with Dr. T. Knicker, professor and head of the Department of Allergy and Immunology, University of Texas, San Antonio, at the meeting of the American Academy of Allergy and Immunology in New York City on March 16, 1985; Dr. McCourtie attended a conference, Man in Health and Disease, sponsored by the Human Ecology Foundation of Canada, presented on April 13, 1985 and Dr. Gerrard attended a meeting on Clinical Ecology sponsored by the California Medical Association on April 30, 1985. Dr. Woodward attended the annual meeting of the Canadian Federation of Biological Societies in June, 1985, to hear talks by Drs. J.F. Soothill and J.W. Crayton.

8. Meetings with Patients

In addition to their discussions as part of their observation of the programs noted above, some members met with patients to discuss the Committee's work. Judge Thomson and Dr. Woodward met with a number of patients in Barrie on February 23, 1985; on March 8, 1985, four Committee members also met with Mr. and Mrs. R. Sommervile and their son, Nathaniel, of North Bay.

9. The Chairman's Meetings with Doctors and Other Groups and Individuals

As the Chairman of the Committee, Judge Thomson discussed the issue of environmental hypersensitivity with the following individuals and groups: R. Halford, associate director of education at the Toronto Board of Education; Dr. Trevor Hancock, associate medical officer of health for the City of Toronto; Dr. Cecil Collins-Williams, former head of the department of allergy at the Hospital for Sick Children; Dr. Rose Sheinin, professor in the Department of Microbiology at the University of Toronto; Dr. Barry Zimmerman, director of the allergy department of the Hospital for Sick Children; Darlene Koski, president of the Human Ecology Foundation of Canada; Dr. Laurel Spielberg, epidemiologist with the public health branch of the Ontario Ministry of Health; Dr. Stephen Spielberg, associate professor of pediatrics and pharmacogenetics at the Hospital for Sick Children; Dr. William G. Crook of Jackson, Tennessee; Drs. Stanley Baker and Frank Waickman; Julia Grenville; Patricia Orwen; Dr. Richard Ellis; Marie Rounding; Barbara Mowat and Beryl Gasparti; Chris Nikiforuk and Damien Boyd; Gayle Mudry; Maggie Burston; Barbara Ferns; Gloria Lewis; David Baker; Julia Orwen and Michael Goetz; Mr. and Mrs. O. Langmark and their son Christopher; Shirley and David Stronge, parents of patient Sandra Stronge.

The Committee learned a great deal from all those people who, because of their personal or professional concerns, took time out to share their knowledge, ideas and experience with us. We welcome this opportunity to acknowledge their help and to thank them.

Chapter Two

Environmental Hypersensitivity Disorders

This chapter has four objectives:

- to arrive at a working definition of environmental hypersensitivity, based on information given to the Committee;

- to outline the major theories of causation described in the clinical ecology literature;

- to suggest which theories are worthy of further study, based on existing knowledge in this and related fields;

- to note some alternative theories of causation articulated by those who question the existence of the disorder.

A. Environmental Hypersensitivity: Description

Although public concern about the relationship between environmental factors and ill health is greater than ever before, little is known about either the underlying mechanisms or the effects of that relationship. This lack of information severely hampered our efforts to define environmental hypersensitivity; other factors also prevent the development of a precise definition. They are: inconsistencies in terminology; the diffuse nature of the symptoms and, finally, continuing controversy about some of the procedures used to diagnose the disorder.

1. Terminology

Environmental hypersensitivity has been termed "Twentieth Century Disease", largely by the media. Other terms in common usage include "environmentally induced illness" (American Academy of Environmental Medicine, (AAEM, 1984), "food and chemical sensitivity" (Crook, 1983), "ecologic illness (Bell, 1985) and "chemical hypersensitivity syndrome" (Environmental Health Association, 1985). For purposes of discussion, the use of the term "environmental hypersensitivity" in this report refers to the above conditions.

2. Symptomatology

"Ecologic illness" is defined as "any of a wide variety of chronic syndromes which result from multiple sensitivities to substances from the external environment . . ." (Bell, 1985). Similarly, "chemical hypersensitivity syndrome" is "the complex systemic condition and pathologic states resulting from a single exposure or repeated sensitization to specific molecules or structurally related chemical compounds" (Environmental Health Association, 1985). These two definitions are used to illustrate the heterogeneous nature of environmental hypersensitivity.

This disorder is characterized by multiple-system involvement resulting in a wide variety of symptoms, of which some are vague and non-specific. Some patients present with only one symptom: for example, headache, abdominal pain, bloating or muscle aches and pains. In general, however, patients report multiple symptoms. The most frequently reported are those affecting the central nervous system -- tension, fatigue, headaches, depression and the inability to concentrate.

An analysis of the main symptoms experienced by patients diagnosed as having environmental hypersensitivity indicates that, in addition to the central nervous system, they involve the following systems:

a) Gastrointestinal: abdominal pain, bloating, heartburn, diarrhea, indigestion, constipation, cramps, nausea, vomiting and anorexia, and food cravings.

b) Respiratory: frequent colds, recurrent bronchitis, congestion and pain in the chest, asthma and unexplained shortness of breath.

c) Musculoskeletal: generalized muscle aches, pains and weaknesses, joint pains, and backaches.

d) Genitourinary: premenstrual headaches and depression, vaginal infections, bladder infections, enuresis, frequency of micturation and painful urination.

e) Eyes, Ear, Nose and Throat: sinus infections, nasal stuffiness, spells of dizziness, earaches, tinnitus, deafness, hoarseness, watering of eyes, and blurring of vision.

f) Skin: eczema, urticaria, dermatitis, hives, widespread flushing and erythema.

g) Cardiovascular: hypertension and cardiac arrhythmias.

It is important to emphasize that the above are the most frequently reported symptoms but do not comprise an all-inclusive list.

3. Diagnostic Methods

A full discussion of the tests and procedures used by clinical ecologists to ascertain the presence of environmental hypersensitivity is found in chapter 6.

4. Working Definition

During the course of our work, we considered at some length the difficulty of accurately describing environmental hypersensitivity and of providing a precise definition, both for reference within the report and for future research. We reviewed the definitions contained in the literature and consulted a number of persons with experience in the area. Although we recognize that the body of knowledge concerning this disorder is rapidly expanding and that subsequent studies may find the following inadequate, we propose it as a working definition of environmental hypersensitivity.

> Environmental hypersensitivity is a chronic (i.e., continuing for more than three months) multisystem disorder, usually involving symptoms of the central nervous system and at least one other system. Affected persons are frequently intolerant to some foods and they react adversely to some chemicals and to environmental agents, singly or in combination, at levels generally tolerated by the majority. Affected persons have varying degrees of

morbidity, from mild discomfort to total disability. Upon physical examination, the patient is normally free from any abnormal objective findings. Although abnormalities of complement and lymphocytes have been recorded, no single laboratory test, including serum IgE, is consistently altered. Improvement is associated with avoidance of suspected agents and symptoms recur with re-exposure.

B. The Environment as a Cause of Environmental Hypersensitivity

It is central to the view of physicians practising clinical ecology or environmental medicine that exposure to "commonly unsuspected or unrecognized" (AAEM, 1985), environmental agents is contributing significantly to ill health. While recognizing the traditional IgE mediated allergic reactions, these practitioners also believe that the pollution of our environment is contributing to the growing number of environmentally sensitive patients. In the opinion of these physicians, "specific offending agents to which individuals of all age groups are becoming increasingly susceptible are found in food, clothing, drugs, air, water, as well as in the home, work and play environment." (AAEM, 1985).

Substances affecting environmentally sensitive individuals have been categorized as follows (Bell, 1982):

1. Chemical pollutants: natural gas fumes, tobacco smoke, food additives, odors from plastic furnishings, formaldehyde, pesticides (Rea et al., 1984), fungicides, herbicides (AAEM, 1985)

2. Common foods (usually those eaten most frequently and in the largest amounts): milk, wheat, eggs, nuts, corn, chocolate (Egger et al., 1985; Rea et al., 1981; Crook, 1983; Lessof, 1983).

3. Natural inhalants: pollens, dusts, animal danders, moulds.

The above is not a complete list of all substances reported to produce adverse reactions in individuals. It is intended to include only the most common substances cited by patients and by clinical ecologists.

Those practising clinical ecology would agree with the statement of Dr. Ian McTaggart-Cowan (Hall and Chant, 1979) that:

> One of the most daunting environmental problems of our time arises from the flood of man-made chemicals pervading our lives . . . The ingenuity of those who have contrived new chemical compounds and devised ways of inserting them into our economy in useful forms or new processes has had much to do with the improvement of the human state. We have too frequently ignored the other side of the coin. To our distress we have slowly learned that some of these products are damaging to human health . . . It is urgent that Canadians clearly grasp the extent and insidiousness of this threat to the viability of our environment.

C. Theories of Causation

Prior to outlining the theories of causation of environmental hypersensitivity that are espoused by clinical ecologists, certain key concepts, fundamental to understanding the theories, need to be described. Dr. Iris Bell (1982) discusses two of these concepts, "total load" and "adaptation-addiction" in her book, Clinical Ecology.

1. Concepts of Clinical Ecology

a) Total load: This concept is related to the belief that most patients have multiple sensitivities. A low dose of one environmental substance may not have an effect. However, low doses of different environmental substances can have either an additive or a synergistic effect (Bell and King, 1981). Environmental hypersensitivity develops when the patient can no longer handle or tolerate this combined load of physical and psychological stresses. The total load concept has been widely adopted by clinical ecologists.

b) Adaptation-addiction: Randolph (1976) has suggested that patients often crave foods that make them ill -- that is, they become addicted to the substances to which they are sensitive. Many clinical ecologists believe that the greatest response to offending substances occurs with initial exposure (Bell, 1982). With repeated exposures, the body adapts by responding with diminished reactions. This type of adaptation to offending agents is often called "masking". An individual who is chronically exposed to an agent to which he or she is sensitive will develop a degree of adaptation to that agent such that acute symptoms do not arise and sensitivity can be identified only after a period of withdrawal. The hypothesis of addiction or "bipolarity" is also derived from the idea of adaptation and relates to the "masking" theory: an individual who is chronically exposed to an offending agent adapts to such a degree that near-normal function becomes dependent on the stimulatory effect of that agent. Withdrawal symptoms occur if exposure to the agent is terminated.

2. Major Theories of Causation

Bell (1982) has suggested two classifications of theories for the occurrence of environmental hypersensitivity; each of which may include more that one theory of causation. They are: immune system mechanisms and central nervous system mechanisms. However, in her discussion of them, Bell (1982) states that "various environmental factors can impinge on both of these systems, which may then serve as part of the common pathway through which external stress promotes disease". Thus, adverse ecologic reactions may involve interactions between the two systems. Because of this postulated close linkage between the immune system and the central nervous system, theories of the cause of environmental hypersensitivity are described in terms of the major environmental factors, rather than by attempting to divide the mechanisms into two distinct groups.

The hypothesis that environmental hypersensitivity is, in fact, environmentally induced is based on a critical presupposition: that either environmental factors are toxic to the host or the host has an altered reaction to environmental factors. Sensitivities to those foods and chemicals found in the everyday environment are thought to be caused by "immune system dysregulation" (AAEM, 1984).

The major triggering factors postulated to cause alterations in immune function or abnormalities in the central nervous system are:

a) viral infections
b) fungal infections
c) emotional stress.

(These trigger factors are outlined later in this chapter in the discussion of the evidence for or against the theories of clinical ecology.)

D. Factors That Modify Adverse Reactions to Environmental Hazards

1. Individual Uniqueness

Clinical ecologists emphasize the uniqueness of the individual and of his or her response to environmental stresses. Iris Bell (1982) said, "The individual's tendency toward specific types of medical and/or psychiatric disorders is likely to be a complex function of age, sex, heredity, biological rhythms and nutritional status." There is a great deal of support for this concept in the scientific literature, and it represents an important area of common ground between clinical ecologists and more traditional medical practitioners.

The level of activity of enzyme systems responsible for metabolizing foreign chemicals ("xenobiotics") is generally low at the fetal stage, rises rapidly after birth and declines slowly in later life (Guengerich, 1984). From conception to puberty, individuals may exhibit particular sensitivity to some environmental agents, showing signs of toxicity that may be unique to this age group. Toxicity may occur at exposure levels to which older individuals exhibit no overt reaction and adverse effects may persist for unusually long periods of time (Spyker, 1975; Fein et al., 1983). Examples of these principles are: the fetal alcohol syndrome (Anon., 1985) and the particular sensitivity of young infants to nitrite (Cordle and Kolbye, 1982). Similarly, allergic diseases are age-dependent, increasing in incidence until young adulthood, after which they decline (Marsh et al., 1981).

The idea that nutritional status is important in determining the impact of environmental agents on health has been the subject of continuing research for a long time (Calabrese, 1980; Hathcock, 1982; Guengerich, 1984). Too little or too much of a single nutrient, or of protein and energy affects the individual's reaction to foreign chemicals, including drugs; and affects the individual's reaction to such other environmental stresses as radiation, noise and temperature extremes. Each nutrient and energy deficiency or excess can cause either increased or decreased reactivity, depending on the particular response examined.

Immunologically-mediated reactions are also subject to nutritional modulation (Beisel, 1982; Watson and Petro, 1984). The effects on many important immune functions of protein-energy malnutrition (both severe and moderate), over-nutrition and deficiencies or excesses of single nutrients have been studied at an accelerating pace for the past 15 years. The widely accepted idea that nutrition influences immune functions (that it depresses or enhances them) is currently being analyzed at the cellular and molecular levels.

Sex differences in xenobiotic detoxifying enzyme functions are widely recognized (Guengerich, 1984). Furthermore, a sex difference in immune functions is a well-established phenomenon that is currently the subject of intense research (Grossman, 1984). Drug allergies and food sensitivities occur more frequently among females than among males, as do allergic manifestations of eczema and hives (Eaton 1982; Ericksson et al., 1982). The reverse sexual dimorphism prevails with regard to hay fever and asthma (Eaton, 1982). As a further example, psychologically based food avoidance syndromes (anorexia nervosa, the bulimic syndrome) occur more frequently among women than among men (Lessof et al., 1984).

Biological rhythms, such as the circadian rhythm, can influence reactivity to environmental agents, whether mediated by immunological or by non-immunological mechanisms. This has been shown in, for example, the response of experimental animals to the toxicant potassium cyanide (Bafitis et al., 1978), and is also known in regard to a number of immune functions both in experimental animals and in mice (briefly reviewed by Shek and Sabiston, 1983).

Genetic make-up represents a determining factor in the sensitivity of individuals to hazardous exposures. According to Kjellman (1982), inheritance is the most important single predisposing factor in the development of type I allergies. Moreover, the clinical expression of allergy, e.g., asthma, hay fever, etc., follows familial tendencies (Gerrard et al., 1976). It is recognized that a large number of genetic conditions will render an affected individual non-immunologically hypersensitive to a drug (Loomis, 1978; Eichelbaum, 1984; Guengerich, 1984; Weinshilboum, 1984); to a chemical in the environment (Loomis, 1978; Carrell and Travis, 1985); or to a food component (Lessof et al., 1984). Many of these conditions are well-defined single gene traits, i.e., inborn errors of metabolism, while others are less well characterized conditions governed by many genes (Loomis, 1978; Eichelbaum, 1984; Lessof et al., 1984). The entire field of pharmacogenetics deals exclusively with the role of inheritance in variations of drug response (Weinshilboum, 1984).

2. Dose

Exposure levels influence both the type and the severity of signs and symptoms of toxicity, as well as the proportion of individuals who will manifest evidence of adverse reactions (Loomis, 1978; Anderson and Scott, 1981; Fein et al., 1983). At present, the potency of an environmental agent is generally defined in terms of overt, clinically evident manifestations, and the concept of threshold has grown out of this practice. Hall and Chant (1979), said in regard to chemical exposures that:

> The concept of threshold holds that for every toxic chemical there is a level below which there is no apparent effect . . . Put more accurately, this is the level below which toxicological technique detects no effect. Large numbers of scientists and especially bureaucrats disregard this inherent limitation of science, and the concept of a real threshold for every chemical is firmly entrenched. The word threshold, however, is more a bureaucratic than a scientific judgment.

Certainly, there may be no fully "safe" level of exposure with regard to such adverse reactions as mutations and the development of cancers (Murthy, 1983). This view has recently been expressed by

Collishaw et al. (1985) with regard to involuntary exposure to cigarette smoke.

Methylmercury poisoning can be used to illustrate a number of the problems associated with determining a "safe" level of exposure and with identifying typical signs of toxicity for a given level of exposure (Fein et al., 1983). At very high levels of methylmercury, most individuals will exhibit the clinical signs of Minimata disease and many will die from this unusual nervous disorder. Even under those circumstances, however, some persons will be initially asymptomatic but later (perhaps years later) will exhibit Minimata disease and die. By contrast, low-level methylmercury toxicity, when evident, may manifest functionally as tremors, loss of fine muscle coordination, fatigue, apathy, emotional lability, impaired memory and inability to concentrate. Fein et al. (1983), comment that signs and symptoms such as these " . . . are unlikely to be characteristic of a particular compound", but will appear following low-level exposure to a variety of agents.

In light of the observations and findings of this Committee with regard to individuals diagnosed as suffering from environmental hypersensitivities, the following statement by Fein et al. (1983), is also of interest:

> At two levels of exposure, the effects may be predominantly behavioural and may differ in different individuals. For these reasons, the overt disease model of toxicity is being replaced by a multiple-effects model that includes subtle behavioural alterations and covert physical changes in addition to overt clinical signs.

3. Interactions Among Environmental Agents

Additional factors that are widely recognized as important in determining the nature and severity of any individual case of adverse reactivity include additive or multiplicative interactions among agents in combination, whether simultaneously or in sequence. It is recognized that there is additivity between the adverse effects of exposure to cigarette smoke and the effects of coal dust (obstructive airway disease); the effects of cotton dust ("Monday morning fever") involving chest tightness, coughing and shortness of breath); the effects of chlorine (reduced maximal expiratory rate of the lungs); and the skin cancer-inducing effects of beta-radiation (Surgeon General's report Smoking and Health, 1979).

Similarly, multiplicative interaction (i.e., synergism) is said in the Surgeon General's report to occur in individuals exposed both to cigarette smoke and to asbestos dust (some lung cancers); or to talc, carbon black and solvent fumes in the rubber industry (lung disabilities); to gold mining operations (chronic bronchitis); or to alpha radiation in uranium mines (emphysema, reduced lung function and lung cancer).

Examples of drug and other chemical interactions include the synergistic influence of cocaine on the response to adrenalin; the additive actions common among anaesthetics; the additive enhancement by barbiturates of antihistamine-induced sedation; and numerous additive or synergistic interactions among pesticides (Loomis, 1978). A different type of interaction occurs with ingested morpholine (an industrial, agricultural and medicinal chemical), which enhances the activity of inhaled nitrogen dioxide in producing lung tumours in experimental animals (Witschi and Hakkinen, 1982).

Other, similar, examples of so-called two-stage carcinogenesis are to be found in the promoting action of agents such as saccharin or butylated hydroxytoluene on cancer induction by chemicals known to be carcinogenic. In such cases, exposure to the promoters and to the actual carcinogens need not be simultaneous (Witschi and Hakkinen, 1982). Finally, interactive effects can differ qualitatively from reactions elicited by separate exposures to the individual agents as shown in the behavioral response of rats given xylene by inhalation and ethyl alcohol by ingestion (Savolainen et al., 1979).

E. Assessing Some Major Theories, Beliefs and Practices in Clinical Ecology

In this section, common tenets and practices, some fundamental to clinical ecology, are considered in relation to supportive experimental evidence of which the Committee is aware.

1. Major Theories Without Significant Experimental Support

a) Total Load, Adaptation, Masking and Bipolarity Theories

The Committee is unaware of experimental support for the total load theory. The study of Savolainen et al. (1979) is frequently cited, but is inadequate for this purpose because each of the two interacting agents (xylene and ethyl alcohol) was administered at a level sufficient to induce a reaction. This does not constitute evidence for the total load theory as it is described by Bell (1982), i.e., " . . . low doses of substances which singly might be benign may interact '. . . to produce illness." A major problem with the total load hypothesis is that, although it holds the attraction of logic, it may prove experimentally untestable.

With regard to the idea of adaptation, it is well established that the enzyme systems responsible for detoxifying foreign chemicals will increase in activity on exposure to sub-lethal levels of a toxic agent (Guengerich, 1984). At the whole-organism level, this biochemical phenomenon frequently correlates with increased resistance to toxic agents. The corollary hypothesis of "masking", however, is currently without experimental support. This is acknowledged by Bell (1982). A similar problem is found with the "bipolarity" hypothesis. Randolph (1971) and Rea (1982) cite addiction to narcotics, tobacco and alcohol as examples of "bipolarity". Although this hypothesis may have some basis in logic, the Committee is unaware of any experimental evidence that suggests that common foods or environmental chemicals can elicit an addictive condition.

b) Fungal Infections as a Factor in Environmental Hypersensitivity

Crook (1983) states that chronically ill adult patients who present with multiple system complaints often give a medical history (oral contraceptives, coricosteroid therapy, pregnancy) that suggests Candida albicans may have colonized the intestinal tract. The belief is that Candida, a normal inhabitant of the intestine, particularly of the mouth, and of the vagina, thrives on diets rich in refined carbohydrate. Its growth is held in check by the normal bacterial flora of the gut, and becomes excessive if the bacteria are reduced by repeated courses of antibiotics, and/or if the patient has had courses of steroids, has been on the pill, or has lived on a diet rich in refined carbohydrate and yeast-containing foods. The proliferation of Candida releases toxins that impair immune function. Truss (1980; 1981; 1983) suggested that chronic Candida infection of the vagina and/or gastrointestinal tract could impair the immunologic competence of the host, leading to the development of allergies of the respiratory and genitourinary tracts, of multiple food and chemical intolerances, and of mental changes such as depression, mental confusion, mood swings, and irritability. The Candida theory is commonly held and elaborately described but, in the opinion of this Committee, it is speculative and devoid of any experimental support.

2. Some Preliminary or Controversial Research Findings Relevant to Theories and Practices of Clinical Ecology

This sub-section looks at particularly interesting experimental work that lends support to some controversial ideas and practices in clinical ecology. The preliminary nature of the cited findings must be emphasized; nevertheless, we acknowledge that new concepts, some perhaps now on the horizon, may be needed to contain our rapidly expanding body of factual information on physiological responses to environmental adversity.

a) Neutralization Treatments

Among the controversial diagnostic and therapeutic procedures in clinical ecology is neutralization, either by sublingual or intradermal administration of an offending agent. In this regard, it is interesting that oral administration of aspirin can elicit desensitization in some, but not all, patients with an idiosyncratic (i.e., non-immunological) reaction to this drug (Pleskow et al., 1982; Chiu, 1983). The refractory state is initiated within minutes of the desensitizing dose and persists for several days. In addition Kare et al. (1969) demonstrated a little-known diffusional route by which substances such as glucose, salt (sodium chloride) and the insecticide phosphamidon may pass, within less than five minutes, directly from the mouth to the brain. The relationship between this finding and the clinical practice of sublingual neutralization is presently unknown (Bell, 1982); however the absorption of drugs through the oral mucosa is a recognized phenomenon (Gibaldi and Kanig, 1965).

b) Allergic Reactions Fundamental to the Development of Environmental Hypersensitivity

An immunological basis for environmental hypersensitivity is sometimes posited. Intriguing evidence suggests, by association, a role for blood-borne immune complexes in the late-onset symptoms of food allergies (Brostoff et al., 1977; Brostoff et al., 1979; Paganelli et al., 1979; Wraith et al., 1982; Brostoff et al., 1983). The food-elicited immune complexes of allergic subjects appear fundamentally different from those of non-allergic subjects in that they contain IgE (in a mixed complex with IgG) and are relatively more long-lasting (Brostoff et al., 1983). In addition, oral sodium cromoglycate prevents development of early and late-onset food-related allergic symptoms as well as the appearance of IgE-containing immune complexes in the blood (Brostoff et al., 1977; Brostoff et al., 1979; Paganelli et al., 1979; Wraith et al., 1982; Brostoff et al., 1983).

Sodium cromoglycate is a locally acting, nonabsorbed drug; therefore, a central immunological role of the gastrointestinal tract is proposed for a number of seemingly food-related hypersensitivities. The possibility is that a form of serum sickness (type III hypersensitivity) may be elicited through an intestinal type I reaction to ingested substances. It is hypothesized that the initial type I reaction promotes absorption of immune complexes or of inappropriately large quantities of the ingested allergenic material. Preliminary results consistent with the general hypothesis have occurred in double-blind, placebo-controlled challenge studies using sodium cromoglycate on some patients suffering from conditions not normally considered to result from allergic reactions (e.g., migraine (Monro et al., 1984) and arthralgia (Wraith et al., 1982; Carini et al., 1984) and tartrazine sensitivity (Wraith et al., 1982). In personal communication with the Committee on Environmental

Hypersensitivity Disorders (Toronto, Ontario, Saturday, March 2, 1985), Dr. Jonathan Brostoff suggested that a plethora of adverse reactions could arise, either locally or systemically, from release of inflammatory mediator compounds through binding of IgE-containing immune complexes, within any organ, to cells such as mast cells, basophils, monocytes and platelets. Each of these cell types is known to have specific surface receptors for IgE (Melewicz and Spiegelberg, 1980; Sell, 1980; Hokama and Nakamura, 1982; Joseph et al., 1983; Bowry, 1984).

Other immunological features of patients with environmental illnesses are reviewed by Bell (1982). These include low blood T lymphocytes in the blood, low serum IgA levels and low serum levels of some complement components (cf. also Crayton, 1985 in the latter case). For the most part, these reported effects are slight, found inconsistently and/or of dubious significance with regard to immune function. Moreover it is unclear whether the effects are causative or simply secondary to ecological illnesses. Nevertheless it is clear from the relatively new and rapidly-expanding field of immunotoxicology, that an enormous variety of food components and environmental chemicals can elicit depressive or enhancing influences on immune functions. These effects may be exerted with considerable specificity. The common food additive carrageenan, for example, may serve as an adjuvant that preferentially induces IgE synthesis (Nicklin and Miller, 1985).

c) Somatopsychic Causation of Behavioural Problems Associated with Environmental Hypersensitivity

As noted earlier in this chapter, emotional stress is frequently mentioned as a trigger factor in the development of environmental hypersensitivity. Patients with environmental hypersensitivity commonly suffer from psychological disturbances and exhibit behavioural problems (Bell, 1982). Both immunological and non-immunological mechanisms might influence brain function as indicated by fragmentary but suggestive support from many published studies. The olfactory system has nervous connections with the limbic system that comprises those parts of the brain with particular regulatory function over behaviour and emotions (Komisaruk and Beyer, 1972; Leonard and Tuite, 1981). Dietary imbalances modulate the levels of some important nerve transmitter compounds in the brains of experimental animals (Anderson and Johnston, 1983). This is the basis, for example, for the controversial but sometimes efficacious use of oral tryptophan loads in the treatment of depressive disorders (Anderson and Johnston, 1983) e.g., the recent successful double-blind, placebo-controlled study of patients with acute mania or pathological aggression (Young, 1985). Digestion of foods causes release of opiate-like chemicals termed exorphins (Klee et al., 1979), and these substances may subsequently reach the brain (Rapaport et al., 1979).

Finally, much evidence now points to feedback regulation between the immune and central nervous systems by way of both anatomical and biochemical links (Marx, 1985; Tecoma and Huey, 1985). The firing rate of nerve cells in the hypothalamus is increased during immune responses (Marx, 1985) perhaps by way of soluble factors released from activated lymphocytes (Goldstein et al., 1983; Marx, 1985). In addition, human leukocytes may release an opioid activity (Palmblad, 1985). Moreover, thymus hormones may promote stress hormone production from the adrenal cortex by acting through the hypothalamus and pituitary (Goldstein et al., 1983; Marx, 1985). In addition, pathological regulation of brain functions is suggested by the association, in experimental animals, between the development of behavioural anomalies and the deposition at the cerebrospinal fluid/blood barrier of immune complexes to foods (Hoffman et al., 1978; Harbeck et al., 1979).

A greater variety of observations suggest reciprocating central nervous regulation of the immune system. It is posited that emotional stress can trigger allergic symptoms in sensitive individuals (Furkawa and Roesler, 1980). Psychological stress, e.g., bereavement, seems to depress some immune functions (Marx, 1985; Palmbad, 1985; Tecoma and Huey, 1985). Moreover, lymphocyte-mediated immune responses including type I allergy can be behaviourally controlled in experimental animals, i.e., elicited by a learned stimulus without exposure to allergen in immunologically sensitized animals, or inhibited by a stimulus previously encountered only in combination with a specific chemical immunosuppressant (Marx, 1985; Palmbad, 1985). Central nervous system regulation of immune functions may be mediated by several chemical mediators, including the brain peptides termed enkephalins and endorphins, for which specific surface receptors exist on human lymphocytes (Palmbad, 1985; Tecoma and Huey, 1985; Wybran, 1985). In addition, specific patterns of nerve fibres are now recognized within many organs of the immune system (Marx, 1985). The study of these phenomena comprises a new and rapidly expanding field termed neuroimmunolodulation. There are now two monographs (Ader, 1981; Guilleman et al., 1985) published on this subject.

d) Viral Infections as a Factor in Environmental Hypersensitivity

Brostoff (1985) has suggested that environmental hypersensitivities may be precipitated by severe viral infections. In this regard, Frick et al., (1979) found that children with a genetic predisposition to allergies often developed those conditions following a virus infection. Moreover, "paralysis" of the immune system by infectious organisms such as the measles virus is a widely recognized, although incompletely understood, phenomenon (Joffe et al., 1983). Several recent reports (Tobi et al., 1982; Hamblin et al., 1983; Jones et al., 1985; Straus et al., 1985) have indicated that the Epstein-Barr virus (EBV), in addition to causing infectious mononucleosis, can initiate a persistent, chronic illness characterized by fever, fatigue, depression, paresthesiae, mental confusion, psychoneuroses, headache, enlargement of liver or spleen, adenopathy, myalgia, arthritis, the development of allergies and abdominal complaints. The evidence of a persisting infection rests on the finding of an elevated titer of IgG antibodies to the viral capsid antigen (VCA). IgM antibodies to the VCA are found only at the onset of the infection.

Infectious mononucleosis develops when the E-B virus enters the circulation, meets a receptor site on the B cell, then enters the cell and multiplies. Recovery occurs when the host mounts a T cell response (the activated T cells are those characteristically seen in patients with infectious mononucleosis); these destroy and kill many of th E-B virus-containing B cells. The destruction of these cells is, however, not complete. After recovery, the virus may continue to survive in B cells, but its multiplication is thought to be held in check by the host's T cells. The symptoms of patients who cannot completely suppress E-B virus replication and who develop a chronic, polysomatic illness, resemble those reported by patients with environmental hypersensitivity. Many of the patients who wrote to the Committee said that their illnesses started with viral infections, often infectious mononucleosis.

Indirect support for the general idea of a trigger mechanism, whether an infectious episode or not, may derive from present knowledge of factors (Sell, 1980) that can precipitate a seemingly unrelated type III (antireceptor) hypersensitivity.

e) Food Allergy as a Cause for Many Disease Conditions

The clinical ecology literature attributes a wide variety of disease conditions to environmental hypersensitivities. Many of these claims remain unproven, but controversial evidence indicating that migraine headaches and rheumatoid arthritis can originate from food allergies is outlined here.

i) Migraine

Food-related migraine is widely attributed to an idiosyncratic response to tyramine which is found, for example, in cheese, chocolate and red wine (Hanington, 1967; Moffett et al., 1972). As indicated in the brief introduction to the paper of Egger et al. (1983), the enzymatic basis for this claimed idiosyncrasy is not yet established. Some tenuous evidence suggests that migraine can result from allergic rather than idiosyncratic response to foods. Monro et al. (1980), reported that food-specific IgE levels were high in some migraineurs and could even serve a predictive function with regard to migraine-inciting foods in these individuals. Moreover, oral sodium cromoglycate gave partial or complete protection from migraine during single food challenges. Unfortunately the nature of the challenge procedure is not made clear in this report. Monro et al. (1984), however, reported the efficacy of oral sodium cromoglycate in double-blind trials with this drug in a small sample of migraine patients challenged with known provocants. Moreover, in this study, the appearance of IgE-immune complexes correlated with development of migraine although the specificity of the IgE was not examined. Finally, Egger et al. (1983), implicated a food-allergic mechanism for some migraine sufferers on the basis that a high proportion in a sample containing 40 children with frequent severe migraine responded to a large number of foods (55 in total) in double-blind, placebo-controlled trials. An idiosyncratically based response might not be expected against such a wide variety of seemingly dissimilar foods. Overall, the results of these experimental studies suggest that an intestinal type I allergic reaction to foods might elicit migraine in some patients, and in some cases an initial type I reaction may elicit a delayed response by way of a type III (immune complex) reaction.

ii) Rheumatoid Arthritis

A relationship between diet and the clinical manifestations of rheumatoid arthritis is unproven. Intake of a diet containing a high level of evening primrose oil (to supply the fatty acid linolenic acid) reduced the severity of experimentally induced arthritis in rats (Kunkel et al., 1981). Similarly, a modest improvement in symptoms was noted in a 12-week double-blind, placebo-controlled study of the influence of the fatty acid eicosapentaenoic acid on rheumatoid arthritis patients (Kremer et al., 1985). The reported effects of manipulating dietary fatty acid content are generally attributed to a pharmacological modification in prostaglandin formation.

A second, and perhaps even more controversial, possibility is that diet and rheumatoid arthritis can be related through an allergic mechanism. The laboratory of R.R.A. Coombs has developed a serum sickness (type III hypersensitivity) model for early rheumatoid-like lesions in rabbits given intravenous injections of bovine serum (Poole et at., 1978). In a presumed extension of this model, Coombs and Oldham (1981) demonstrated development of moderate to severe rheumatoid-like changes in the knee joints of a susceptible breed of rabbits given cow's milk either orally or by intravenous injection. High levels of serum antibodies against cow's milk proteins were found in the challenged rabbits. In an open-challenge case study of a single rheumatoid arthritis patient, Parke and Hughes (1981), demonstrated an association between development of joint symptoms following milk or cheese consumption and appearance in the serum both of specific IgE antibodies to components of these foods and of modestly increased levels of IgE immune complexes. In other clinical experimentation, Yeatts et al. (1978), reported immune-complex-mediated release of platelet serotonin, an inflammatory mediator, in rheumatoid arthritis patients, and Little et al. (1983), correlated apparent release of serotonin from platelets with the development of joint symptoms in rheumatoid arthritis patients following open challenge with foods known to elicit swelling and pain in the joints of these subjects.

Finally, in this context it may be of some interest that double-blind challenges with suspected foods elicited arthralgia (joint pain) in a small sample of patients (Wraith et al., 1982; Carini et al., 1984). The provocants were previously identified by dietary exclusion and open challenge. In the same studies, double-blind, placebo-controlled oral administration of sodium cromoglycate gave protection against the effects of provocant foods. It must be emphasized, however, that direct evidence is lacking for implicating a food allergy mechanism in the causation of rheumatoid arthritis or related joint complaints.

3. Alternative Explanations for Environmental Hypersensitivity

A number of alternative explanations have been offered for the symptoms demonstrated by patients with environmental hypersensitivity. These are presented for information only and no attempt is made to evaluate the literature in support of each of them:

a) The Premenstrual Syndrome

The somatic complaints of patients with the premenstrual syndrome have many features in common with those reported by patients with environmental hypersensitivity. The premenstrual syndrome is a group of symptoms that recur regularly in the premenstruum (Dalton, 1984). It is a clinical entity not identifiable by laboratory tests. It presents in three forms: in the first and most common, symptoms develop four to five days before menstruation; in the second and next most common, symptoms develop transiently at the time of ovulation and during the week prior to menstruation; in the third and least common but most troublesome, symptoms start at ovulation and progress steadily throughout the premenstrual period, clearing only at menstruation. The symptoms associated with the premenstrual syndrome include such mood changes as irritability, anxiety, hostility, depression and spells of unaccountable crying. Such somatic complaints as breast tenderness, arthralgias and unexplained fluid retention, as well as bloating, backache, headaches, and food cravings, particularly for coffee, chocolate and candies, also occur.

b) Hyperventilation

Lum (1981; 1982a; 1982b), has reported that hyperventilation can trigger symptoms that resemble closely those manifested by patients with environmental hypersensitivity. These include palpitations; precordial pain; dizziness; paresthesiae, particularly of the hands, feet and face; shortness of breath; dysphagis; heartburn; muscular cramps; and pains; anxiety and even hallucinations.

c) Hypoglycemia

Some patients develop symptoms of anxiety, feelings of prostration, profound exhaustion, and palpitations following meals (Sherwin and Felig, 1981). The effect is more pronounced if the meal is rich in refined sugar and carbohydrate. These patients never develop the syncope or seizures seen in patients with profound hypoglycemia, nor do they become hypoglycemic if fasted. Blood sugar levels taken postprandially may, but do not often, fall below 50 mg per cent (Anderson and Lev-Ran, 1985). The patient's symptoms are ascribed by some to hypoglycemia.

d) The APICH Syndrome

This explanation is proposed by Saifer (1985), for patients who do not respond to anti-Candida treatment. These patients are classified as having Autoimmunity, Polyendocrinopathy, Immune dysregulation, Candidiasis and Hypersensitivity, the APICH syndrome. The commonest polyendocrine disorder is thyroiditis, followed by oophoritis.

e) Electromagnetism

Smith et al., (1985), have encountered a few patients with environmental hypersensitivity who experience mood changes, which are triggered by very small changes in electromagnetic radiation, by electric outlets in the home, by thunder storms, by fluorescent lighting, and even by passing under or near high-tension cables. These patients often find that their own electromagnetic charges disturb the normal functioning of digital watches, and their own sensitivities to electromagnetic charges in the environment enable them to "witch" successfully for water.

f) Iatrogenic Illness

Opponents of clinical ecology have suggested that environmental hypersensitivity is an iatrogenic illness (Brodsky, 1985; Terr, 1985), that is that the illness is a direct result of diagnostic or therapeutic efforts of a physician. In an analyses of eight environmentally ill patients, Brodsky (1983) concluded that, "These patients search for healers who will provide them with an explanation of their experiences and symptoms that makes sense to them and that fulfills a number of psychological needs."

g) Psychosomatic Illness

Some physicians regards environmental hypersensitivity as a manifestation of a psychiatric disorder. By definition, patients with environmental hypersensitivity have a multiplicity of symptoms, but no laboratory evidence of organic disease. The mental component of their illness suggests to many that the illness is psychosomatic, a disturbed psyche leading to disturbance of the soma (Brodsky, 1983). In a meeting with the Committee on Environmental Hypersensitivity Disorders (Toronto, Ontario, March 8th, 1985), Dr. Donna Stewart discussed this issue. In her opinion, persons suspected of having environmental hypersensitivity might more appropriately be diagnosed as having somatization disorder (Monson and Smith, 1985; Stewart, 1985).

Chapter Two - References

1. Ader, R. Psychoneuroimmunology. Toronto: Academic Press, 1981: 661.

2. American Academy of Environmental Medicine. Position Paper, 1984-1985. Denver, Colorado, 1984.

3. Anderson, G.H. and Johnston, J.L. "Nutrient Control of Brain Neurotransmitter Synthesis and Function". In Canadian Journal of Physiol. Pharmacol., 1983; 61: 271-281.

4. Anderson, K. and Scott, R. Fundamentals of Industrial Toxicology. Ann Arbor Science Publishers, Inc., 1981.

5. Anderson, R.W. and Lev-Ran, A. "Hypoglycemia: The Standard and the Fiction". In Psychosomatics, 1985; 26: 38-47.

6. Anon. "Fetal Alcohol Syndrome". In In-Touch, 1985; 3(II): 3-4.

7. Bafitis H.; Smolensky, M.H.; and Bartholomew, P.H. "A Circadian Susceptibility/Resistance Rhythm for Patassium Cyanide in Male BALB/cCr Mice". In Toxicology, 1978; 11: 251-258.

8. Beisel, W.R. "Single Nutrients and Immunity". In American Journal of Clinic. Nutr., 1982; 35: 417-468.

9. Bell, I.R. Clinical Ecology: A New Medical Approach to Environmental Illness. Bolinas, California: Common Knowledge Press, 1982.

10. ------------; King, D.S. "Psychological and Physiological Research Relevant to Clinical Ecology: An Overview of the Current Literature." Paper presented to the annual meeting of the Society for Clinical Ecology, Hershey, Pennsylvania, October, 1981.

11. -------------; Langley Porter Research Institute, San Francisco, California. Personal communication, 1985.

12. Bowry, T.R. Immunology Simplified, 2d ed. Oxford: Oxford University Press, 1984; 230.

13. Brodsky, C.M. "Allergic to Everything: A Medical Subculture". In Psychosomatics, 1983; 24 (8): 731-742.

14. -------------, Professor of Psychiatry, University of California, San Francisco. Personal communication, 1985.

15. Brostoff, J; Carini, C.; and Wraith, D.G. "Food Allergy: An IgE Immune Complex Disorder". In Skandia International Symposia: Theoretical and Clinical Aspects of Allergic Disease. Stockholm: Almquist and Wiksell International, 1983; 104-122.

16. --; and Johns, P. "Production of IgE Complexex by Allergen Challenge in Atopic Patients and the Effect of Sodium Cromogylcate". In The Lancet, 1979; I: 1268-1270.

17. Brostoff, J.; Johns, P. and Stanworth, D.R. "Complexed IgE in Atopy". In The Lancet, 1977; II: 741-742.

18. Calabrese, E.J. The Vitamins, Nutrition and Environmental Health. Toronto: John Wiley & Sons, 1980; 1: 585.

19. Carini, C; Brostoff, J.; and Wraith, D.G. "Food Allergy as a Cause of Arthralgia". In Immun. Clin. Sper., 1984; III (1): 31-39.

20. Carrell, R. and Travis, J. "Antitrypsin and the Serpins: Variation and Countervariation". In Trends

Biochem. Sci., 1985; 10: 20-24.

21. Chiu. J.T. "Improvement in Aspirin-Sensitive Asthmatic Subjects After Rapid Aspirin Desensitization and Aspirin Maintenance (ADAM) Treatment". In *The Journal of Allergy Clin. Immunol.*; 1983; 71: 560-567.

22. Collishaw, N.E.; Kerbride, J.; and Wigle, D.T. "Tobacco Smoke in the Workplace: An Occupational Health Hazard". In *Journal of the Canadian Medical Association*, 1985; 131: 1199-1204.

23. Coombs, R.R.A. and Oldham, G. "Early Rheumatoid-Like Joint Lesions in Rabbits Drinking Cow's Milk". In *Int. Arch. Allergy Appl. Immun*., 1981; 64:287-292.

24. Cordle, F. and Kolbye, A.C. "Environmental Contaminants in Food". In *Nutritional Toxicology*. New York: Academic Press, 1982; 1: 303-325.

25. Crayton, J.W. "Behavioural and Immunological Reactions to Foods". In *Canadian Fed. Biol. Soc.*, 1985; 28: 36.

26. Crook, W.G. "The Coming Revolution in Medicine". In *J. Tenn. Med. Assoc.*, 1983; 76 (3).

27. Dalton, K. *The Premenstrual Syndrome and Progesterone Therapy*. London: William Heinemann

Medical Books Inc., 2d Edition, 1984.

28. Eaton, K.K. "The Incidence of Allergy - Has It Changed?". In *Clin. Allergy*, 1982; 12:107110.

29. Egger, J.; Carter, C.M.; Graham, P.J. et al. "Controlled Trial of Oligoantigenic Treatment in the Hyperkenetic Syndrome". In *The Lancet*, 1985; 1:540-545.

30. Egger, J.; Carter, C.M.; Wilson, J.; Turner, M.W.; and Soothill, J.F. "Is Migraine Food Allergy?: A Double-Blind Controlled Trial Oligoantigenic Diet Treatment". In *The Lancet*, 1983; II:865-869.

31. Eichelbaum, M. "Polymorphic Drug Oxidation in Humans". In *Fed. Proc*., 1984; 43:2298-2302.

32. Eriksson, N.E.; Formagen, H.; and Svenonius, E. "Food Hypersensitivity in Patients with Pollen Allergy". In *Allergy*, 1982; 37:437-443.

33. Environmental Health Association, Sacramento, California, 1985.

34. Fein, G.G.; Schwartz, P.M.; Jacobson, S.W.; and Jacobson, J.L. "Environmental Toxins and Behavioral Development: A New Role for Psychological Research". In *Amer. Psychologist*, 1983; 38:1188-1197.

35. Frick, O.L.; German, D.F.; and Mills, J. "Development of Allergy in Children: I. Association with Virus Infections". In J. Allergy Clin. Immunol., 1979; 63:228-241.

36. Furkawa, C.T.; and Roesler, T.A. Psychologic Aspects of Allergic Disease, in Allergic Disease of Infancy, Childhood and Adolescence. Toronto: W.B. Saunders Company, 1980; 353-363.

37. Gerrard, J.W.; Ko, C.G.; Vickers, P.; and Gerrard, C.D. "The Familial Incidence of Allergic Disease". In Ann. Allergy, 1976; 36:10-15.

38. Gibaldi, M.; and Kanig, J. "Absorption of Drugs Through the Oral Mucosa". In J. Oral Therapeutics Pharmacol., 1965; 1:440-446.

39. Goldstein, A.L.; Low, T.L.K.; Zatz, M.M.; Hall, M.R.; and Naylor, P.H. "Thymosins". In Clinics in Immunol. Allergy, 1983; 3:119-132.

40. Grossman, C.J. "Regulation of the Immune System by Sex Steroids". In Endocrine Rev., 1984; 5:435-455.

41. Guengerich, F.P. "Effects of Nutritive Factors on Metabolic Processes Involving Bioactivation and Detoxication of Chemicals". In Ann. Rev. Nutr., 1984; 4:207-231.

42. Guillemin, R.; Cohn, M.; and Melnechuk, T. Neural Modulation of Immunity. New York: Raven Press, 1985; 253.

43. Hall, R.H.; and Chant, D.A. "Ecotoxicity: Responsibilities and Opportunities". In Canadian Environmental Advisary Council Report No. 8, Ottawa, August, 1979.

44. Hamblin, T.J.; Hussain, J.; Akbar, A.N.; Smith, J.L.; Jones, D.B. "Immunological Reason for Chronic Ill Health After Infectious Mononucleosis". In Br. Med. Journal., 1983; 287:85-88.

45. Hanington, E. "Preliminary Report on Tyramine Headache". In Br. Med. J., 1967; 2:550-551.

46. Hathcock, J.N. "Nutritional Toxicology: Definition and Scope". In Nutritional Toxicology. New York: Academic Press, 1982; 1:1-15.

47. Harbeck, R.J.; Hoffman, A.A.; Hoffman, S.A.; and Shucard, D.W. "Cerebrospinal Fluid and the Choroid Plexus During Acute Immune Complex Disease". In Clin. Immunol. Immunopathol., 1979; 13:413-425.

48. Hoffman, S.A.; Shucard, D.W.; Harbeck, R.J.; and Hoffman, A.A. "Chronic Immune Complex Disease: Behavioral and Immunological Correlates". In J.

Neuropath. Exp. Neurol., 1978; 37:426-436.

48. Hokama, Y.; and Nakamura, R.M. Immunology and Immunopathology: Basic Concepts. Boston: Little, Brown and Company, 1982; 528.

50. Joffe, M.I.; Sukha, N.R.; and Rabson, A.R. "Lymphocyte Subsets in Measles. Depressed Helper/Inducer Subpopulation Reversed by In Vitro Treatment with Levamisole and Ascorbic Acid". In J. Clin. Invest., 1983; 72:971-980.

51. Jones, J.F.; Ray, C.G.; Minnich, L.L.; Hichs, M.J.; Kibler, R.; Lucas, D.O. "Evidence of Active Epstein-Barr Virus Infection in Patients with Persistent, Unexplained Illnesses: Elevated Anti-Early Antigen Antibodies". In Ann. Int. Med., 1985; 102:1-7.

52. Joseph, M.; Auriault, C.; Capron, A.; Voring, H.; and Viens, P.A. "A New Function for Platelets: IgE Dependent Killing of Schistosomes". In Nature, 1983; 303:810-812.

53. Kare, M.R.; Schechter, P.J.; Grossman, S.P.; and Roth, L.J. "Direct Pathway to the Brain". Science, 1969; 163:952-953.

54. Kjellman, N.I.M. "Prediction and Prevention of Atopic Allergy". In Allergy, 1982; 37:463-473.

55. Klee, W.A.; Zioudrou, C.; and Streaty, R.A. "Exorphins: Peptides with Opioid Activity Isolated From Wheat Gluten, and Their Possible Role in the Etiology of Schizophrenia". In Endorphins In Mental Health Reasearch. New York: Oxford University Press, 1979; 209-218.

56. Komisaruk, B.R.; and Beyer, C. "Responses of Deincephalic Neurons to Olfactory Bulb Stimulation, Odor, and Arousal". In Brain Res., 1972; 36:153-170.

57. Kremer, M.J.; Bigauoette, J.; Michalek, A.V.; Timchalk, M.A.; Lininger, L.; Rynes, R.I.; Huyck, C.; Zieminski, J.; and Bartholemew, L.E. "Effects of Manipulation of Dietary Fatty Acids on Clinical Manifestations of Rheumatoid Arthritis". In The Lancet, 1985; I:184-187.

58. Kunkel, S.L,; Ogawa, H.; Ward, P.A.; and Zurier, R.B. "Suppression of Chronic Inflammation by Evening Promrose Oil". In Prog. Lipid Res., 1981; 20:885-888.

59. Leonard, B.E.; and Tuite, M. "Anatomical, Physiological and Behavioral Aspects of Olfactory Bulbectomy in the Rat". In Int. Rev. Neurobiol., 1981; 22:251-286.

60. Lessof, M.H. "Food Intolerance and Allergy: A Review". In Quart. J. Med., 1983; 52:111-119.

61. -------------- et al. "Food Intolerance and Food Aversion: A Joint Report of the Royal College of Physicians and the British Nutrition Foundation". In J. Roy. College Phys. London, 1984; 18:84-123.

62. Little, C.; Stewart, A.G.; Fennessy, M.R. "Platelet Serotonin Release in Rheumatoid Arthritis - A Study in Food-Intolerant Patients". In The Lancet, 1983; II:297-299.

63. Loomis, T.A. Essentials of Toxicology, 3d Edition. Philadelphia: Lea & Febiger, 1978; 245.

64. Lum, L.C. "Hyperventilation and Anxiety State". In J. Roy. Soc. Med., 1981; 74:1-4.

65. Lum, L.C. "Total Allergy". In Br. Med. J., 1982b; 284:1044-1045.

66. Lum, L.C. "Total Allergy Syndrome or Fluctuating Hypocarbia". In The Lancet, 1982a I:516.

67. Marsh, D.G.; Mayers, D.A.; and Bias, W.B. "The Epidemiology and Genetics of Atopic Allergy". In New Eng. J. Med., 1981; 305:1551-1559.

68. Marx, J.L. "The Immune System Belongs in the Body". In Science, 1985; 227:1190-1192.

69. Melewicz, F.M.; and Spiegelberg, H.L. "Fc Receptors for IgE on a Subpopulation of Human Peripheral Blood Monocytes". In J. Immunol., 1980; 125:1026-1031.

70. Moffett, A.; Swash, M.; and Scott, D.F. "Effect of Tyramine in Migraine; a Double-blind Study". In J. Neurol. Neurosurg. Psychiatry, 1972; 35:496-499.

71. Monson, R.A.; Smith, G.R. "Somatization Disorder in Primary Care". In New England J. Med., 1983; 308:1464-1465.

72. Monro, J.; Brostoff, J.; Carini, C.; and Zilkha, K. "Food Allergy in Migraine: Study of Dietary Exclusion and RAST". In The Lancet, 1980; II:1-4.

72. Monro, J.; Carini, C.; Brostoff, J. "Migraine is a Food Allergic Disease". In The Lancet, 1984; II:719-720.

74. Murthy, M.S.S. "Radiation, Ionizing: Equivalence of Chemicals". In Encyclopedia of Occupational Health and Safety, 3d ed. 1983; 2:1850-1851.

75. Nicklin, S.; and Miller, K. "Induction of a Transient Reaginic Antibody to Tartrazine in an Animal Model". In Int. Archs. Allergy Appl. Immunol., 1985; 76:185-187.

76. Paganelli, R.; Levinsky, R.J.; Brostoff, J.; and Wraith, D.G. "Immune Complexes Containing Food Proteins in Normal and Atopic Subjects After Oral Challenge and Effect of Sodium Cromoglycate on Antigen Absorption". In The Lancet, 1979; I:1270-1272.

77. Palmblad, J.E.W. Stress and Human Immunologic Competence. In Neural Modulation of Immunity. New York: Raven Press, 1985; 45-53.

78. Parke, A.L.; and Huges, G.R.V. "Rheumatoid Arthritis and Food: A Case Study". In Br. Med. J., 1981; 282:2027-2029.

79. Pleskow, W.W.; Stevenson, D.D.; Mathison, D.A.; Simon, R.A.; Schaatz, M.; and Zeiger, R.S. "Aspirin Densensitization in Aspirin-Sensitive Asthmatic Patients: Clinical Manifestations and Characterization of the Refractory Period". In J. Allergy Clin. Immunol., 1982; 69:11-19.

80. Poole, A.R.; Oldham, G. and Coombs, R.R.A. "Early Rheumatoid-Like Lesions in Rabbits Injected with Foreign Serum: Relationship to Localization of Immune Complexes in the Lining Tissues of Joints and Cellular Content of Synovial Fluid". In Int. Archs. Allergy Appl. Immunol., 1978; 57:135-145.

81. Randolph, T.G. "Stimulatory and Withdrawal Levels and Alterations of Allergic Manifestations". In Clinical Ecology, L.D. Dickey (ed). Thomas, Springfield, 1976.

82. ---------------- "The Realities of Food Addiction. 1. Description and Recognition". In Health News and Views, No. 10. Human Ecology Study Group, Chicago, 1971; 8.

83. Rapaport, S.I.; Klee, W.A.; Pettigrew, K.D.; and Ohno, K. "Entry of Opioid Peptides into the Central Nervous System". In Science, 1979; 207:84-86.

84. Rea, W.J.; Butler, J.R.; Laseter, J.L. et al. "Pesticides and Brain-Function Changes in a Controlled Environment". In Clin. Ecology, 1984; 2:143-150.

85. Rea, W.J. "Environmentally Triggered Disorders". In Sandorama, 1982; IV:27-31.

86. Rea, W.J.; Peters, D.W.; Smiley, R.E. et al. "Recurrent Environmentally Triggered Thrombophlebitis: A Five Year Follow-Up". In Ann. Allergy, 1981; 47:338-344.

87. Saifer, P.L. "Endocrinopathy in the Chronic Candidasis Patient". Paper presented at the Yeast Human Interaction Symposium, San Francisco, March, 1985.

88. Savolainen, H.; Pfaffli, P.; Helojaki, M.; and Tengen, M. "Neurochemical and Behavioral Effects of Long-Term Intermittent Inhalation of Xylene Vapors and Simultaneous Ethanol Intake". In Acta Pharmacol. et Toxicol., 1979; 49:200-207.

89. Sell, S. Immunology Immunopathology and Immunity. New York: Harper & Row, 1980; 521.

90. Shek, P.N.; and Sabiston, B.H. "Neuroendocrine Regulation of Immune Processes: Change in Circulating Corticosterone Levels Induced by the Primary Antibody Response in Mice". In Int. J. Immunopharmac. 1983; 5:23-33.

91. Sherwin, R.S.; Felig, P. "Hypoglycemia". In Endocrinology and Metabolism. P. Felig, J.D. Baxter, A.E. Broadus, L.A. Frohman, 1981; 869-889.

92. Smith, C.W.; Choy, R.; Monro, J. "Environmental, Allergenic and Therapeutic Effects of Electromagnetic Fields". Presented at Third Annual International Symposium on Man and His Environment in Health and Disease. Dallas, Texas, February 21-24, 1985.

93. Spyker, J.M. "Assessing the Impact of Low Level Chemicals on Development: Behavioral and Latent Effects". In _Fed. Proc._, 1975; 34:1835-1844.

94. Stewart, D. Department of Psychiatry, University of Toronto. Personal communication, 1985.

95. Straus, S.E.; Tosato, G.; Armstrong, G.; Lawley, T.; Preble, O.T.; Henle, W.; Davey, R.; Pearson, G.; Epstein, J.; Brus, I.; Blaese, R.M. "Persisting Illness and Fatigue in Adults with Evidence of Epstein-Barr Virus Infection". In _Ann. Int. Med._, 1985; 102:7-16.

96. _Smoking And Health: A Report Of the Surgeon General_. Washington, D.C.: U.S. Department of Health, Education and Welfare, 1979.

97. Tecoma, E.S.; and Huey, L.Y. "Minireview: Psychic Distress and the Immune Response". In _Life Sci._, 1985; 36:1799-1812.

98. Terr, A.I. "Environmental Illness: Review of 50 Cases". In J. Allergy Clin. Imminol., 1985; 75:169.

99. Tobi, M.; Morag, A.; Ravid, Z. et al. "Prolonged Atypical Illness Associated with Serological Evidence of Persistent Epstein-Barr Virus Infection". In The Lancet, 1982; I:61-64.

100. Truss, C.O. The Missing Diagnosis. Birmingham, Alabama: C.O. Truss, 1983.

101. ------------- "Restoration of Immunologic Competence to Candida Albicans". In J. Orthomolecular Psychiatry, 1980; 9:287-301.

102. ----------- "The Role of Candida Albicans in Human Illness". In J. Orthomolecular Psychiatry, 1981; 10:228-238.

103. Watson, R.R.; and Petro, T.M. "Resistance to Bacterial and Parasitic Infections in the Nutritionally Compromised Host". In CRC Crit. Rev. Microbiol., 1984; 10:297-315.

104. Weinshilboum, R.M. "Human Pharmocogenetics". In Fed. Proc., 1984; 43:2295-2297.

105. Witschi, H.P.; and Hakkinen, P.J. "The Lung as a Site of Toxicological Interactions". In Trends Pharmacol. Sci., 1982; 3:1-3.

106. Wraith, D.G.; Brostoff, J.; and Carini, C. "Adverse Reactions to Foods: Clinical Characteristics, Dietary Exclusion Challenge Data and RAST in a Group of Food Sensitive Patients and the Role of Sodium Cromoglycate". In Folia Allergol. Immunol. Clin., 1982; 29:456-462.

107. Wybran, J. "Enkephalins and Endorphins as Modifiers of the Immune System: Present and Future". In Fed. Proc., 1985; 44:92-94.

108. Yeatts, R.P.; Turner, R.; Collins, R.; Kaufman, J.; and Mashburn, H. "Soluble and Insoluble Immune Complex: Platelet Interactions in Rheumatoid Inflammation". In Ann. Rheum. Dis., 1978; 37:421-427.

109. Young, S.N. "Diet, Aromatic Amino Acids, Mood and Aggression". In Can. Fed. Biol. Soc., 1985; 28:35 (Abstract).

Chapter Three

Present Knowledge of Adverse Reaction to Environmental Agents

Introduction

This chapter outlines current information regarding the diversity of adverse reactions that can occur when human beings or animals are exposed to environmental agents. Its second purpose is to demonstrate the limits to our present knowledge about those adverse reactions and about the mechanisms that underly them. It is the Committee's opinion that this information provides an important context within which we place our later consideration of environmental hypersensitivity as a clinical entity.

A. Widely Accepted Disease Reactions

1. Immunologically-Mediated Reactions

In 1906 Von Pirquet coined the term "allergy" to describe a state of "altered reactivity" following exposure to a substance that is nontoxic to most people (Sell, 1980). At present, however, the term is generally applied only to immunologically mediated reactions; according to Sell (1980), "The terms immunity and allergy are now used interchangeably for manifestations of immune reactions." For the purposes of this report, it is this definition that has been adopted.

Immunopathology is the study of tissue alterations that occur in allergic reactions. Six types of immunopathological processes are recognized; with specific examples, they are as follows (Sell, 1980; Bowry, 1984):

a) Type I Reaction (Immediate Or Anaphylactic)

Clinical manifestations develop within 10 or 15 minutes after exposure to allergen. Most reactions are localized in the skin, gastrointestinal tract or respiratory tract but shock-like systemic reactions also occur. The reaction is antibody-mediated and generally results from the interaction of allergen with IgE-coated mast cells or basophils. It can also result, however, either from a similar interaction with these cells when coated with one IgG subclass (Nava, 1983; Bowry, 1984) or from the activation of complement by IgA or IgM (Hokama and Nakamura, 1982). The inflammatory mediators released by these interactions have been intensively studied in recent years, and their identities and modes of action are becoming reasonably well documented. Examples of substances, some common and some very rare, that can elicit a type

I reaction in human beings and/or experimental animals include the following:

i) "natural" chemicals such as pyrethrum, which is an insecticide constituent, and orris root, used in perfumes, dentifrices and cosmetics (Mathews, 1982),

ii) "synthetic" chemicals, such as toluene diisocyanate used in adhesives and some paints, the epoxy resin activator phthalic anhydride and trimellitic acid, which is an intermediate in the preparation of inks, dyes, platicizers, resins and adhesives ((Pepys, 1982),

iii) drugs, such as penicillin and most other antibiotics, egg-containing vaccines, commercial bovine/porcine insulin preparations, iron dextran and previously-used diagnostic agents including Congo red and sulfobromophthalein sodium (Patterson and Anderson, 1982),

iv) food components, such as B-lactoglobulin, casein, lactalbumin and bovine serum albumin in cow's milk, allergen M protein in codfish white muscle, and the several highly allergenic proteins in egg white and wheat flour (Aas, 1984),

v) food additives, such as vegetable gums (Mathews, 1982), and

vi) other agents, such as mold spores, pollens and house dust components including mites and animal epidermal products (Mathews, 1982), as well as venoms of bees, hornets and wasps (Patterson and Valentine, 1982).

b) Type II Reaction (Cytotoxic)

This reaction is of the "immediate" type similar to type I and is mediated by IgG, IgM or IgA antibodies directed against compounds exposed on cellular or tissue membranes of the human body. Affected cells and tissue membranes are usually disrupted by the action of complement, sometimes in concert with phagocytes. Occasionally a poorly understood blood cell, termed the K cell, may induce similar damage without invoking a complement-dependent mechanism (Hokama and Nakamura, 1982). Examples of this type of reaction directly relevant to the present report include destruction of red blood cells, platelets or neutrophils induced by drugs such as several antibiotics (e.g., penicillin, tetracyclines, cephalosporins, sulfonamides), aspirin, antihistamines, digitoxin, isoniazid, methyldopa, aminopyrine, quinidine, quinine (which is also a food additive), thiouracil, the formerly available sedative

"Sedormid", and numerous other compounds (Roitt, 1977; Hokama and Nakamura, 1982; Patterson and Anderson, 1982; Bowry, 1984).

c) Type III Reaction (Immune Complex-Mediated)

This hypersensitivity is mediated by complexes between soluble compounds and the pre-formed antibodies directed against them. The latter may be of IgG, IgA or IgM type, and the reaction usually develops within a few hours. Resulting complement activation induces inflammatory reactions that may be either localized (e.g., in the kidney, thyroid, joint capsules, lung, intestinal mucosa) or systemic (the shock-like condition termed "serum sickness"). Inflammatory phagocytes and blood clots elicit further tissue injury and death. Examples of disease conditions involving type III reactions are as follows:

i) lung diseases: induced by allergy to organisms including bacteria, fungi and mites, to animal danders (Hokama and Nakamura, 1982) and to synthetic chemicals including diisocyanates and epoxy resins (Nava, 1983);

ii) kidney diseases: induced by reaction to bacteria (streptococci), hepatitis virus B, the malaria organism or the drug penicillamine (Hokama and

Nakamura, 1982; Bowry, 1984);

iii) skin conditions elicited through contact with natural or synthetic chemicals such as salicylates, the dye phenylenediamine and the cathartic henolphthalein (Nava, 1983);

iv) gastrointestinal disturbances: resulting (in pigs and calves) from ingestion of soybean protein (Barratt et al., 1979); and

v) systemic (serum-sickness-like) reactions: to drugs such as penicillin, sulfonamides, piperazine citrate, thiouracil and amino salicyclic acid (Hokama and Nakamura, 1982; Patterson and Anderson, 1982).

d) Type IV Reaction (Delayed Hypersensitivity)

This so-called "cell-mediated reaction" is initiated by specifically sensitized lymphocytes and usually occurs without the involvement of antibodies and complement. The reaction generally requires up to 24 hours to become grossly apparent and 48 to 72 hours to develop maximum intensity. Cellular and tissue injury occur by way of phagocytes attracted to the inflammatory site or by direct action of "killer" lymphocytes or other circulating leukocytes. Examples of type IV immunopathology include the following:

i) dermatitis resulting from contact with diverse natural and synthetic chemicals (Nava, 1983) e.g., botanical agents such as urushiol from the poison ivy plant; components of cosmetics; industrial chemicals; fibres; dyes and finishers used in clothing manufacture; drugs including antihistamines, sulfonamides and penicillin; metals such as nickel; hexachlorphene used in germicidal soaps; chromates used as tanning agents; formaldehyde; and many others (Sherman, 1968; Roitt, 1977); and

ii) lesions associated with allergy to bacteria (e.g., tuberculosis), viruses (e.g., measles, smallpox, herpes simplex), fungi (e.g., Candida) and protozoans (e.g., Leishmania) (Roitt, 1977).

e) Type V Reaction (Antireceptor)

This hypersensitivity is mediated by IgG antibodies and the result is generally an inactivation of biologically active molecules e.g., cell surface receptors for insulin (a form of diabetes mellitus) and neuromuscular junction receptors for acetylcholine (myasthenia gravis). In Graves' disease the thyroid receptors for thyroid-stimulating hormone are blocked by an antibody which, nevertheless, triggers hyperthyroidism. A number of events can trigger type V hypersensitivity.

These include allergic reactions to drugs such as penicillin; chronic infections such as tuberculosis or syphilis; collagen diseases, many of which develop as type III hypersensitivities; pregnancy and some other conditions (Sell, 1980).

f) Type VI Reaction

This is a miscellaneous category characterized by the activation of the complement system of inflammatory mediators by the nonspecific immune (alternative) pathway. An example of this type of condition is gram-negative endotoxic shock induced by cell wall components of some bacteria, including common gastrointestinal organisms (Bowry, 1984).

2) Non-Immunologically Mediated Reactions

a) Reactions To Food Components Including Additives

i) Pharmacological Reactions

Potentially, these reactions can occur in any individual. Active agents include compounds such as caffeine in coffee, tea, and cola drinks, and vasoactive amines e.g., histamine, tryptamine, tryramine, serotonin, octopamine and synephrine found in wine, cheese, yeast extracts, bananas, avocados, some fish, citrus fruits, etc. (Anderson, 1984; Lessof et al., 1984; Metcalf, 1984). The adverse effects of these compounds are exerted mainly on the gastrointestinal, cardiovascular and central nervous systems (Anderson, 1984). It should be noted that all but a few individuals would have to take abnormal amounts of these compounds to experience these effects. Histamine, for example, is rapidly metabolized by the intestinal mucosa and the liver (Moneret-Vautrin, 1979). On the other hand, such foods as strawberries and crustacea -- as well as ethyl alcohol and the preservative metabisulfite -- will induce histamine release following ingestion (Anderson, 1984).

ii) Toxic And Cancer-Producing Reactions

These reactions can occur in any individual after sufficient exposure. Examples of food toxins include contaminants, additives and natural constituents. Finfish and shellfish accumulate heavy metals such as methylated mercury, while lead is found particularly in fruits and vegetables (Cordle and Kolbye, 1982). (Occupational and general environmental exposures are also a significant cause of heavy metal intoxication.)

Other contaminants include: fungal toxins, such as the liver cancer-producing aflatoxins found mainly on peanuts, corn, and small grains; nitrates from fertilizers found in domestic water and vegetables; and nitrites included as a preservative and as colour or flavour enhancers in cured meats, some fish and cheese (Cordle and Kolbye, 1982). By its reaction with hemoglobin, nitrite _per se_, either pre-formed or from nitrate, is toxic primarily to young infants, while both nitrates and nitrites can give rise to nitrosamines, which are recognized carcinogens in animals (Cordle and Kolbye, 1982).

Natural constituents of foods can also exert adverse effects e.g., the effects of oxalates in beets on the central nervous system, gastrointestinal tract and respiratory system (Burton and Hanenson, 1980). Anderson (1984) pointed out that the diverse possible signs and symptoms from food-borne toxins frequently mimic immunologically-based (allergic) reactions.

iii) _Idiosyncratic Reactions_

These reactions occur only in those individuals with specific susceptibilities resulting from inborn errors of metabolism, disease conditions, drugs or unidentified causes. Primary (genetic) and secondary (disease-related) lactase deficiencies result in gastrointestinal problems after ingestion of only moderate quantities of cow's milk. A congenital inability to metabolize fructose results in liver disease and failure to thrive in children, and causes food aversions and anomalous behaviour in older subjects. In the severe Mediterranean form of glucose-6-phosphate dehydrogenase deficiency, ingestion of broad beans results in sudden destruction of red blood cells. These and many other adverse reactions due to identified genetic anomalies are reviewed by Lessof et al.(1984), and Anderson (1984).

In addition, a number of food additives can elicit clinical manifestations, particularly in the skin (e.g., hives) and lungs (asthma). Such compounds include the colouring agent tartrazine used in drugs as well as foods and drinks; and such widely used food and beverage preservatives as benzoates, bisulfites, metabisulfites, butylated hydroxyanisole and butylated hydroxytoluene (Anderson, 1984; Lessof et al., 1984). In these cases, idiosyncratic sensitivities are widely believed to occur but etiologic mechanisms remain obscure.

iv) Psychogenic Reactions

These include a number of entities that are poorly understood in terms of etiology, pathogenesis and clinical features. A brief review is presented by Lessof et al. (1984), but other reviews by Metcalfe

(1984) and Anderson (1984), although inclusive of nonimmunologically-mediated food sensitivities, make no mention of psychological disorders. Food avoidance syndromes are most common among women and range from distaste to phobias such as anorexia nervosa and the bulimic syndrome (binge eating of high carbohydrate foods with fatness prevented by purgation, psychogenic vomiting, or periods of starvation).

A second type of psychogenic reaction is psychological food intolerance, which results in physical symptoms when particular foods are knowingly consumed. Finally, in the present context of hypersensitive reactions to foods (or drugs, chemicals, etc.), habitual simulation of ailments that have not occurred is a recognized condition termed Munchausen's syndrome, a variant of which (Munchausen's syndrome by proxy), can be imposed on children by their parents.

b) Reactions To Drugs And Other Chemicals Not Primarily Found In Foods

The classification scheme followed in this sub-section is a modification of that indicated in chapters 7-9 of Loomis (1978).

i) Nonspecific Irritant Actions

These reactions occur mainly on the skin, in the respiratory tract and the eyes, and manifest either as corrosive or blistering actions (Loomis, 1978; Anderson, 1981; Nethercott, 1982). Sulfur dioxide and nitrogen dioxide in smogs resulting from fossil fuel combustion are converted to primary irritants in the presence of water from the air or at mucous membranes. Formaldehyde, ozone and the refrigerant methylbromide are primary irritants, as are numerous organic and inorganic antiseptic and germicidal compounds.

Inhaled irritants, such as air pollutants and strong odours, can trigger symptoms of hay fever in persons with a history of this allergic condition (Mathews, 1982). Moreover, Mathews (1982) stated that "Hyperirritability of the airways to a variety of inhaled pharmacologic agents as well as to nonspecific irritants is common to all asthmatic patients."

In a letter to the Committee, dated May 31, 195, Dr. Leonard Bernstein (University of Cincinnati Medical Center, College of Medicine, Department of Internal Medicine, Division of Immunology, said:

> I think it would be very important to address the question of toxic elements in

> the environment and how such exposures could affect susceptible individuals. There is much available information in the medical literature that ordinary outdoor pollutants such as sulfur dioxide, ozone and oxides of nitrogen can affect patients with pre-existing bronchial hyper-responsiveness . . . very heavy exposures that one could classify as toxic to such gases as chlorine, very high concentrations of sulfur dioxide and other gases are, in fact, able to induce bronchial hyperactivity . . . the state of bronchial hyperreactivity may persist for years . . . and our group, in fact, has coined a new term for these conditions, "the reactive airways disease syndrome" or "RADS".

ii) Specific Toxicologic And Cancer-Producing Actions

Compounds in this category are toxic primarily on one or two major target organs. They can be specific for a single receptor site e.g., botulinus toxin with regard to its effect on nerve terminals (Loomis, 1978) and the organophosphate insecticides, which interfere with central and peripheral nerve function by a specific action on the enzyme acetylcholinesterase (Duke and Dumas, 1974).

The halogenated hydrocarbons e.g., carbon tetrachloride and dichloromethane, are common industrial chemicals and are liver and kidney toxins (Anderson and Scott, 1981). The former is widely used as a dry cleaning and industrial solvent, as an extinguisher of fire and as a starting material in industrial organic syntheses, while the latter compound is a cleaning fluid and food processing solvent. Even when ingested in relatively small quantities by primates, methanol ("wood alcohol") causes damage specifically to the retina; it is a common industrial and pharmaceutical solvent also used as an antifreeze component, in gasoline, etc. (Dreisbach, 1980). At very high levels, methanol also damages the liver, kidneys, lungs and brain.

Some agents produce cancers in specific organs, e.g., benzidine used in the manufacture of dyes (liver tumours); thorium dioxide formerly used as a radiopaque medical diagnostic aid (liver tumours) and vinyl chloride monomers used in the plastics industry and as a refrigerant (liver tumours) (Hayes, 1983a).

The importance of minor differences in chemical structure in determining the target organ for carcinogenesis is illustrated by the nitrosamine group, various members of which affect principally the liver, bladder or brain (Hayes, 1983a). These compounds are found in factory exhausts and cigarette smoke and also derive from nitrite and nitrate food preservatives.

iii) Production Of Pathologic Sequelae

In this type of adverse reaction, malfunctions or tissue malformations develop and remain indefinitely, even after exposure to the responsible agent has been discontinued; this is because the tissue fails to regenerate normal cells (Loomis, 1978). Examples include scar tissue formation in the lung as the result of exposure to such dusts as silica and asbestos (Hayes, 1983b) and cancer of the membranous capsule surrounding the lungs (i.e. the pleura) resulting from asbestos inhalation (Homburger, 1983). Tricresyl phosphate (used,for example, in vinyl plastic manufacture, as a flame retardant, as an hydraulic fluid and in gasoline) damages certain nerve cells with resultant long-lasting muscle paralysis (Loomis, 1978).

Organic mercury, e.g., methyl mercury, results from bacterial conversion of the inorganic mercury, which is widely used in scientific and electronic industries. This form of mercury induces brain damage and peripheral nerve damage that can be irreversible. It can be internalized by ingestion of foods from treated crops (Cordle and Kolbye, 1982), and is also readily absorbed through the lungs and skin (Hayes, 1983c). Examples of drugs inducing pathologic sequelae include the sedative thalidomide (withdrawn from the market because of malformation induced *in utero*) and triparanol, once used for lowering blood lipid levels but now associated with formation of irreversible cataracts (Loomis, 1978).

c) Ionizing Radiations

Loosely regarded as "radioactivity", ionizing radiations include electromagnetic waves, i.e., x-rays and gamma rays, as well as particulate forms, i.e., alpha and beta particles, neutron, positron, charged and uncharged mesons, accelerator particles and fission fragments (Robertson, 1983). Exposure occurs through natural background radiation (from sources external to and within the planet), medical activities, nuclear weapons testing and nuclear power plants. Rapidly-dividing cell populations exhibit particular sensitivity to high levels of radiation. These populations include bone marrow components responsible for generating blood cells, stem cells for the gastrointestinal epithelium, cells that give rise to the skin, cells that give rise to sperm, and ova in mature and intermediate follicles. Possible results include hemorrhage, fluid loss, infection or the poorly understood central nervous syndrome, and are acutely lethal. A high incidence of cancers is found among individuals exposed to levels of radiation that are not acutely lethal. A recent epidemiological study (Hickey et al., 1981), however, indicated that background radiation may be, at most, a minor risk factor in the development of a number of cancers and cardiovascular diseases.

B. Widespread, Recognized or Potential Environmental Hazards

1) Cigarette Smoke (a brief summary of findings in the Surgeon General's report, Smoking and Health, 1979)

More than 2000 compounds, including known irritants and carcinogens, are generated by at least seven different chemical processes in a lighted cigarette. Cigarette smoking is an established major risk factor for development of cardiovascular diseases, is causally related to cancers of the lung, larynx, oral cavity and esophagus, and is also associated with cancers of the urinary bladder, kidney (information for males only) and pancreas. The latter three associations indicate the possibility of as-yet unidentified organ-specific carcinogens in tobacco smoke. Cigarette smoke is further associated with numerous non-cancerous diseases of the respiratory tract and, by unknown mechanisms, with increased risk of morbidity and mortality from peptic ulcers.

The report identified a large number of urgent research needs and made clear our superficial understanding of the pathological conditions associated with cigarette smoking. For example, epidemiological information about cardiovascular diseases is far from satisfactory or complete and knowledge of disease mechanisms is fragmentary and primitive. Six priority research questions were outlined (p. 6-42) concerning the relationship between cigarette smoking and various non-cancerous lung diseases. It was also pointed out (pp. 1-19 to 1-20) that improved information is needed on interactions, whether additive or synergistic, between harmful compounds in cigarette smoke and other hazardous exposures. Finally, tobacco smoke contains numerous compounds that can elicit immune responses and smoking is associated with a variety of immunological anomalies, but the role of allergy in tobacco-related pathology is unknown at present.

An added dimension to the problem of disease associated with cigarettes is the growing awareness of hazards imposed by "second-hand" smoke. The Surgeon General's Report (1979) pointed out that fetal growth rate is retarded by maternal smoking and that the risk of peri-natal mortality is elevated. The Report stated (p. 8-74), "A number of important questions relating to the possible biological effects of tobacco smoke and its constituents on the fetus in utero and the newborn infant remain unanswered . . . " and 88 research questions were subsequently outlined (pp. 8-75 to 8-81). There is also concern about the effects of second-hand cigarette smoke on healthy, non-smoking children, adolescents and adults.

The current controversy is particularly focused on involuntary exposure of healthy adults in the workplace. Collishaw et al. (1985), state that "Existing air quality standards for workplaces do not directly specify an acceptable level for tobacco smoke. The evidence on the composition of tobacco smoke and on the health hazards of involuntary exposure suggests that there may not be a 'safe' level for such exposure."

The acute effects of involuntary exposure on the health of susceptible individuals -- such as those with heart disease, respiratory ailments and hayfever -- are reasonably well recognized (Collishaw et at., 1985). There is considerable controversy, however, about the possible consequences to the general public of chronic passive smoking. These effects may include impaired lung function and cancers of the respiratory tract (Collishaw et al., 1985) as well as ischemic heart disease (Garland et al., 1985). A recent issue of _Consumer Reports_ concluded that current evidence of long-term risk to the public at large is sparse and conflicting. Data are scarce, even those related to such a simple question as how much tobacco smoke is inhaled by a non-smoker at a given level of exposure.

2) _Food Additives_

Weiss (1983) stated, "Food additives are probably the most ubiquitous products of modern chemistry." Probably the most thoroughly evaluated food additives are the colouring agents (Borzelleca et al, 1983). Test protocols emphasize pathology, particularly evidence of cancer-causing risk (Khera and Munro, 1979; Weiss, 1983), and also include studies of effects on reproduction and on the fetus (Berdick, 1982). Despite the view espoused by some authors that "The Food, Drug and Cosmetic colours do not pose a threat to human health at levels currently in use or at levels greater than those currently used", (Borzelleca et al.,1983), Berdick (1982) claimed a paucity of information with regard to trace contaminants, metabolism (an important factor in secondary hazards), and metabolic fates such as tissue accumulation and allergenicity. Moreover, at present behaviour analysis is not routinely conducted in evaluating food additives (Berdick, 1982; Weiss, 1983; Vorhees et al., 1984) or in judging other potentially hazardous agents, although there is accumulating evidence that such methods are sensitive indicators of functional impairment (Weiss, 1983; Vorhees et al., 1984). Weiss (1983) stated that "To set standards requires us to determine exposures producing subtle, not overt, impairment."

A final point was raised by Berdick (1982) and illustrates a further shortcoming of our present knowledge concerning the hazards of food additives: there are about 20 synthetic organic colours (i.e., that are not found in nature) currently being used in foods in the industrialized countries. At the same time, as many as 50 naturally-occurring colours are in use, half of which could be classed as common additives. There is a frequent misconception that synthetic colours are hazardous while natural ones are safe. However, Berdick (1982) points out that " . . . some of the so-called natural colours are complex chemical mixtures whose composition is incompletely elucidated and whose toxicology is known only to the extent that humans have survived consumption for many years . . . With few exceptions, there is presently much greater assurance of safety of the unnatural colours than of the natural colours . . ."

3) Fluoride

Most current interest in fluoride centres on its efficacy in reducing the incidence of tooth decay, a benefit that has been confirmed by many large-scale controlled studies with children (Anon., 1983). Fluoride serves both to promote formation of hard enamel and to promote repair of weakened enamel. When painted onto the tooth surface, fluoride reduces the numbers of decay-causing bacteria. On a precautionary note, Rose and Marier (1977) reported that exposure to fluorides is increasing in North America because of increased industrial uses of fluoride compounds and because of increased intake through foods and fluoridated water supplies. At present, we have inadequate criteria for assessing "safe levels" of exposure to fluoride, a persistent bioaccumulator, and there is inadequate quantitative information on our total exposure. Occupational fluorosis-related complaints include muscular, skeletal, kidney, neurological and locomotor ailments, but these are implicated primarily through anecdotal reports. Perhaps of more importance, the adverse effects, if any, of chronic low-dose fluoride exposure remain unknown.

Controversial epidemiological evidence linking chronic fluoride intake and cancer death rate was discussed briefly in the report of Rose and Marier (1977) and elsewhere, e.g., Yiamouyiannis (1977). Fluoride has also been rather vaguely associated with thyroid hypofunction; in a few studies, it has been suggested that fluoride increases the nutritional requirement for magnesium, manganese and vitamin C. Considering the highly controversial nature of the allegations surrounding excessive fluoride exposure (particularly the chronic, low-dose type) and the uncertainties of information about "safe" levels and about actual exposures in human populations, Rose and Marier (1977) listed 19 priority research items related to fluoride toxicology.

4) Formaldehyde and Urea Formaldehyde Foam Insulation (UFFI)

Formaldehyde is off-gassed from a variety of household products, ranging from rugs to particle board. A number of symptoms have been attributed to formaldehyde and it has been suggested that symptoms caused by the presence of urea formaldehyde foam insulation (UFFI) were produced by the formaldehyde released from the foam. Most responses to the presence of formaldehyde appeared to be in proportion to the concentration of formaldehyde in households.

Therefore, preliminary evaluation of the health effects of UFFI focused on formaldehyde. Among the adverse effects considered were: allergic reactions (Popa et al., 1969; Day et al., 1985); as well as hyper-responsiveness of the upper and lower respiratory tract, including exacerbation of previously existing respiratory problems, such as asthma, bronchitis, emphysema and acute respiratory infections (Porter, 1975; Hendrick and Lane, 1977). In addition, formaldehyde was thought capable of producing sub-clinical lower respiratory tract responses that would increase possible future reactivity to diverse bronchial irritants. It has also bee suggested that substantial air pollutants in urban centres might exacerbate the adverse effects of formaldehyde (LaBelle et al., 1955; Day, 1981).

Day et al., (1982), and Day et al., (1983), undertook a co-ordinated assessment of the potential health effects of formaldehyde. Persons reporting reactivity to UFFI comprised the study group in each case, and the purpose was to assess the impact of formaldehyde and UFFI off-gas on the upper and lower respiratory tracts and the middle ear. The study of Day et al., (1983), focused specifically on subjects complaining of asthma thought to result from UFFI exposure. UFFI off-gas in a chamber environment increased lower airways reactivity in these subjects. No other indication was obtained to suggest that either formaldehyde or UFFI off-gas function as respiratory irritants or as allergy-inducing compounds. Low levels of formaldehyde, therefore, can act as a respiratory irritant, and levels sometimes observed in UFFI-containing households can elicit an asthmatic response. A reaction to formaldehyde appears likely to be at least partly responsible for the health problems experienced by the small proportion of the population that reacts to the presence of UFFI in its homes.

At present, the long-term effects of formaldehyde on humans are unknown. Current studies involve evaluating the long-term effects of exposure to formaldehyde on undertakers, while future studies should focus, under controlled exposure conditions using specific tests of end organ responses, on the impact of formaldehyde on various tissues over extended periods.

5) Acid Rain

The emissions that produce acid rain derive partly from natural sources, such as decaying organic matter, volcanoes and lightning, but come mainly from the burning of fossil fuels (Garfield, 1985a). This is a global problem because atmospheric acidity is carried into regions thousands of miles from its industrial sources (Garfield, 1985b). A voluminous scientific literature is accumulating on specific effects of acid rain. Most efforts have focused on the impact of environmental acidification on terrestrial and aquatic flora and fauna. While questions of great importance in regard to these matters remain unanswered, there is even greater ignorance about the direct or indirect effects of acid rain on human health (Maugh, 1984; Garfield 1985a).

Acid rain could affect human beings in three ways: first, by deposition on the skin; second, by inhalation and, third, through toxic metals released under acid conditions (Maugh, 1984; Editorial, 1985). No evidence exists of harmful effects from deposition of acid rain on the skin. Sulfur and nitrogen oxides of acidified precipitation are known to cause inhalation-related health problems, but it is impossible, on the basis of present information , to evaluate the nature and extent of health effects resulting from inhalation of acid pollutants (Maugh, 1984).

The major potential health hazard from acid rain could result from the mobilization of minerals present in rocks and soil. These include: lead, mercury, aluminum, cadmium, manganese, nickel, arsenic and zinc. Present interest centres particularly on lead, mercury and aluminum. No information exists about the amount that environmental acidification contributes to total lead and mercury exposure, but indicative measurements are available in relation to aluminum; furthermore, aluminum accumulates in the central nervous system, is a known neurotoxin and is implicated (by association only) in the development of some brain diseases including Parkinson's disease, amyotrophic lateral sclerosis (Lou Gehrig's disease) and Alzheimer's disease. The latter affects about five per cent of the population aged more than 65 years and is one of the commonest causes of mental deterioration in the elderly. The main conclusion of participants at the recent Conference on Health Effects of Acid Precipitation (National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina, Nov. 14-15, 1984) was that present research efforts have only begun to scratch the surface of this problem (Maugh, 1984).

6) Video Display Terminals (VDTs)

The increased frequency of health complaints related to the use of VDTs, combined with an explosive increase in the number of exposure hours in recent years, has sparked interest in studying health hazards associated with them (Donoghue, 1983; Smith et al., 1983). There is a particularly pressing need for long-term studies on the effects of VDTs on health and on the effectiveness of measures taken to alleviate the associated health problems (Donoghue, 1983).

Stress-related complaints amongst VDT users (e.g., fatigue, nervous disorders, disrupted sleep patterns, etc.) require ergonomic modifications (Donoghue, 1983) and, perhaps, attention to such psycho-social factors as job design (Smith et al., 1983). It is imperative to begin research into designing low-stress workplace environments for VDT users. It is possible that health problems, including fetal harm (which has already been the focus of a great deal of concern), results from the VDT user's reaction to a chronically stressful work situation (Donoghue, 1983; Smith et al., 1983).

The current, cautious position of the Ontario Medical Association Committee on Public Health seems most reasonable; the Committee made the following recommendations during its Toronto meeting of June 6-7, 1983:

a) That the OMA accept that video display terminals do not emit hazardous microwave, radiofrequency, ultraviolet infrared or x-ray radiations;

b) that there be an expression of reassurance to all concerned that operators of VDTs have no reason to fear radiation health effects from VDTs;

c) that proper ergonomic standards be encouraged in the workplace to maximize VDT operator comfort; and

d) that the OMA continue to monitor and evaluate all scientific developments in this area.

Summary

Most of the reactions described in the first part of this chapter are well recognized and appropriately prevented or treated by physicians practising conventional medicine. In addition, many workplace hazards mentioned are widely recognized and subject to at least partial control. At the same time, the inadequacy of our information about how humans react to a poor-quality environment dictates caution and even skepticism about our ability to assess the risks to which we are exposed as a result of our simultaneous interactions with diverse agents and complex mixtures. These include: tobacco smoke, natural gas fumes, automobile exhaust, foods and food additives, micro-organisms, agricultural sprays, fluorescent lighting, heavy metals, asbestos, noise and electromagnetic waves. The complexity of the problem, the urgency with which it must be addressed, is evident in this excerpt that was written just in regard to commercially produced chemicals (Somers, 1982):

> The scope and nature of the chemical world created by our rapidly developing technological society over the past 30 years have had a dramatic impact on human health and the environment. The inventory of existing chemical substances in commerce numbers about 70 000 and the estimate of new chemicals entering the market each year in quantities greater than one tonne range from 200-1 000. The

> hazards of these chemicals range from the acute to the long-term: not only the highly publicized concerns with industrial accidents, home insulation, transport of dangerous chemicals, damage to wildlife, possible carcinogenic or mutagenic effects, and toxic waste disposal, but also the hazards of chronic neurotoxic or behavioural changes, or of subtle environmental damage.

The quotation makes no direct reference to the additional complexity that perhaps arises from alterations to chemicals as a result of such processes as metabolism and combustion.

We must develop the knowledge to understand and predict the impact of our civilization on our environment and, ultimately, on our own health. Growing awareness of this need is evident in the existence of the Pollution and Education Review Group, which was established by the Board of Education of the City of Toronto in September, 1984. It is also exemplified (on a larger scale) by the vigorous efforts of academics and industrialists to renew interest by the federal and Ontario governments in establishing high-quality centres related to environmental medicine, like the

Canadian Centre for Toxicology at Guelph and Toronto.

It is that kind of growing environmental concern that was the impetus behind an afternoon session of the BIO EXPO'85 conference at the Bayside Exposition Center in Boston (May 14-15, 1985). It was focused on the development of microbial pesticides because " . . . chemical pesticides are implicated as carcinogens and environmental pollutants" (MacFarlane, 1985).

In the context of this chapter, a long-term, wholehearted commitment to research and development that is devoted to improving environmental quality is an imperative for socially responsible government, at all levels.

REFERENCES

1. Aas, K. "Antigens in Food". In Nutritional Review, 1984; 42:85-91.

2. Anderson, J.A. "Non-immunologically-Mediated Food Sensitivity". In Nutritional Review, 1984; 42:109-116.

3. Anderson, K. and Scott, R. Fundamentals of Industrial Toxicology. Ann Arbor Science Publishers, Inc., 1981; 120.

4. Anon. "Fluoride". In In-Touch, 1983; 2(1) :1-2.

5. Barratt, M.E.J.; Strachan, P.J.; and Porter, P. "Immunologically Mediated Nutritional Disturbances Associated with Soya-Protein Antigens". In Proc. Nur. Soc., 1979; 38:143-150.

6. Berdick, M. "Safety of Food Colors". In Nutritional Toxicology. New York: Academic Press, 1982; 1:383-434.

7. Borzelleca, J.P.; Hallogen, J.; and Reese, C. "Food, Drug and Cosmetic Colors: Toxicological Considerations". In Xenobiotics In Foods And Feeds, 1983; 311-332.

8. Bowry, T.R. Immunology Simplified 2d ed., Oxford: Oxford University Press, 1984; 230.

9. Burton, D. and Hanenson, I.B. "Plant Toxins". In Quick Reference to Clinical Toxicology. Toronto: J.B. Lippincott Company, 1980; 242-251.

10. Collishaw, N.E. Kerkbride, J. and Wigle, D.T. "Tobacco Smoke in the Workplace, an Occupational Health Hazard". In Canadian Medical Association J., 1985; 131:1199-1204.

11. Cordle, F. and Kolbye, A.C. "Environmental Contaminants in Food." In Nutritional Toxicology. New York: Academic Press, 1982; 1:303-325.

12. Day, J.H. "Report on Certain Health Hazards Associated with Urea Formaldehyde Foam Insulation". Report to the Federal Board on Health Effects of Urea Formaldehyde Foam Insulation, July 30, 1981.

13. Day, J.H. Lees, R.E.M., and Clark, R.H. "Report on the Study of the Effect of Different Concentrations of Formaldehyde on Subjects Alleged to Have Symptoms Related to Exposure to Urea Formaldehyde Foam Insulation". Department of National Health and Welfare, Canada, October, 1982.

14. Day, J.H. Lees, R.E.M., Clark, R.H. and Pross, H.F. "Pulmonary Effects of Exposure to Urea Formaldehyde Foam Insulation". Released to the NRC of Canada, April, 1985.

15. Day, J. H.; Lees, R.E.M.; Clark, R.H. and Pattee, P.L. Report on the Study of the Effect of Urea Formaldehyde Foam Insultation (UFFI) Off-Gas on Subjects Alleged to have Symptoms Related to UFFI Exposure. Released to the NRC of Canada, November, 1983.

16. Donoghue, S.L. "Dealing With the Video Display Terminal". In Can J. Public Health, 1983; 74:179-182.

17. Dreisbach, R.H. "Alcohols and Glycols. Methyl Alcohol (Methanol)". In Handbook Of Poisoning, 10th ed. Lange Medical Publications, 1980; 161-163.

18. Duke, T.W. and Dumas, D.P. "Implications of Pesticide Residues in the Coastal Environment". In Pollution And Physiology of Marine Organisms. New York: Academic Press, 1974; 137-164.

19. Editorial. "Acid Rain and Human Health". In The Lancet, 1985; I: 616-618.

20. Garfield, E. "Acid Rain. Part 1: What is it and What Does it Do?" In Current Contents Life Sciences, 1985a; 28(9):3-12.

21. ------------- "Acid Rain. Part 2: Public Issues and Proposal Solutions". In Current Contents Life Sciences, 1985b; 28(1):3-9.

22. Garland, C. Barrett-Connor, E. Suarez, L. Criqui, M.H. and Wingard, D.H. "Effects of Passive Smoking on Ischemic Heart Disease Mortality of Nonsmokers: A Prospective Study". In Amer. J. Epidemiol., 1985; 121:645-650.

23. Hayes, J.A. "Systemic Responses to Toxic Agents". In A Guide To General Toxicology, 1983a; 92-124.

24. ------------- "Inhalation Toxicology". In A Guide To General Toxicology, 1983b; 130-147.

25. ------------- "Metal Toxicity". In A Guide To General Toxicology, 1983c; 227-237.

26. Hendrick, D.J. and Lane, D.J. "Occupational Formalin Asthma". In Br. J. Industrial Med., 1977; 34:11-18.

27. Hickey, R.J. Bowers, E.J. Spence, D.E. Zemel, B.S. Clelland, A.B. and Clelland, R.C. "Low Level Ionizing Radiation and Human Mortality: Multi-Regional Epidemiological Studies". In Health Physics, 1981; 40:625-641.

28. Hokama, Y. and Nakamura, R.M. *Immunopathology: Basic Concepts*. Boston: Little Brown and Company, 1982; 528.

29. Homburger, F. "Carcinogenesis-concepts" In *A Guide To General Toxicology*, 1983; 199-211.

30. Khera, K.S. and Munro, I.C. "A Review of the Specifications and Toxicity of Synthetic Food Colours Permitted in Canada". In *CRC Crit. Rev. Toxicol*., 1979; 6:81-133.

31. LaBelle, C.W. Long, J.E. and Christofano, E.E. "Synergistic Effects of Aerosols". In *Industrial Health*, 1955; 20:297-304.

32. Lessof, M.H. et al. "Food Intolerance and Food Aversion". Joint Report of the Royal College of Physicians and the British Nutrition Foundation. In *J. Roy. College Phys*. 1984; 18:84-123.

33. Loomis, T.A. *Essentials of Toxicology*, 3d ed. Philadelphia: Lea & Febiger, 1978; 245.

34. MacFarlane, J.D. "BIO EXPO 85 Conference Updates Biotechnology's Commercial, Industrial Applications". In *Can. Res*., 1985; 18:62-67.

35. Mathews, K.P. "Respiratory Atopic Disease". In JAMA, 1982; 248:2587-2610.

36. Maugh, II T.H. "Acid Rains's Effects on People Assessed". In Science, 1984; 226:1408-1410.

37. Metcalfe, D.D. "Food Hypersensitivity". In J. Allergy Clin. Immunol., 1984; 73:749-766.

38. Moneret-Vautrin, D.A. "Food Pseudo-Allergy. The Mast Cell: Its Role In Health And Disease". In Pitman Medical, London, 1979; 431-437.

39. Nava, C. Allergy. Encyclopedia Of Occupational Health And Safety, 3d edition, 1983; 1:124-126.

40. Nethercott, J.R. Health Effects of Formaldehyde. Cited by Bruce M. Small and Associates Limited, 1985. Recommendations For Action On Pollution And Education In Toronto: A Report Prepared for the Pollution and Education Review Group of the Board of Education for the City of Toronto, 1982; p. C-75.

41. Patterson, R. and Anderson, J. "Allergic Reactions to Drugs and Biologic Agents". In JAMA, 1982; 248:2637-2645.

42. Patterson, R. and Valentine, M. "Anaphylaxis and Related Allergic Emergencies Including Reactions Due to Insect Stings". In JAMA, 1982; 248:2632-2636.

43. Pepys, J. "Occupational Asthma: An Overview". In J. Occupational Med., 1982; 24:534-538.

44. Popa, V. Teculescu, D. Stunescu, D. and Gavrilescu, N. Bronchial Asthma and Asthmatic Bronchitis Determined by Simple Chemicals". In Dis. Chest, 1969; 56:395-404.

45. Porter, J.A.H. "Acute Respiratory Stress Following Formalin Inhalation. In The Lancet, 1975; II:603-604.

46. Robertson, J.B. "Toxicology of Ionizing Radiation: A Guide To General Toxicology". 1983; 238-253.

47. Roitt, I. Essential Immunology, 3d edition, Oxford: Blackwell Scientific Publications, 1977; 324.

48. Rose, D. and Marier, J.R. "Environmental Fluoride", 1977, National Research Council of Canada, NRC Associate Committee on Scientific Criteria for Envorinmental Quality, NRCC No. 16081, 1977; 151.

49. Sell, S. Immunology Immunopathology and Immunity. New York: Harper & Row, 1980; 521.

50. Sherman, W.B. Allergic Contact Dermatitis: Hypersensitivity, Mechanisms and Management.

Philadelphia: W.B. Saunders Company, 1968; 340-352.

51. Smith, M.J.; Stammerjohn, L.W.; Cohen, B.G.F.; and Lalich, N.R. Job Stress in Video Display Operations: Ergonomic Aspects of Visual Display Terminals. London: Taylor and Francis Ltd., 1983; 201-210.

52. Somers, E. The Risk from Environmental Chemicals: Health Impacts Of Different Sources Of Energy. International Atomic Energy Agency, Vienna, 1982; 63-78.

53. Smoking And Health A Report Of the Surgeon General. Washington, D.C.: U.S. Department of Health, Education, and Welfare, 1979.

54. Vorhees, C.V.; Butcher, R.E.; and Brunner. "Developmental Toxicity and Psychotoxicity of Potassium Iodide in Rats: A Case for the Inclusion of Behaviour in Toxicological Assessment". In Fd. Chem. Tox., 1984; 22:963-970.

55. Weiss, B. "Behavioral Toxicology and Environmental Health Science: Opportunity and Challenge for Psychology". In Amer. Psychologist, 1983; 38:1174-1187.

56. Yiamouyiannis, J. "Flouridation And Cancer". Testimony prepared for the House Subcommittee On

Intergovernmental Relations and Human Resources. In National Fluoridation News, 1977; XXIII(3):3-4.

Chapter Four

Clinical Ecology - Programs Visited

As explained in the first chapter of this report, the Committee had substantial contacts with people involved in all aspects of environmental hypersensitivity. These included visits to clinical ecologists and to other physicians and to wellknown environmental units in the United States. In Toronto, Judge Thomson met with Dr. William Crook, Dr. Stanley Baker and Dr. Frank Waickman. We also spent a very helpful and informative day and-a-half with Dr. Jonathan Brostoff, an immunologist from England, who is active in both research and clinical practice with patients diagnosed as sensitive to food or chemicals.

Committee members also met with most of the clinical ecologists now practising in Ontario. A discussion between our members and several members of the Canadian Society for Clinical Ecology and Environmental Medicine was led by Dr. John Maclennan, a widely recognized pioneer in the field of clinical ecology in this province. A questionnaire seeking information about the tests and treatments currently in use in Ontario was circulated to all of the clinical ecologists who attended.

Two members of the Committee observed a day of clinical practice in the office of a Toronto physician and two others met with patients and practitioners and observed some testing procedures during a full day of meetings in Ottawa. In addition, one Committee member attended a meeting on clinical ecology, sponsored by the Human Ecology Foundation, held in Toronto on April 13, 1985.

Rather than describing each of these trips and meetings in detail, we wish to make a number of general statements about the practice of clinical ecology as it was observed by us. We stress that these are made _solely_ as a result of the visits and discussions outlined above and they should not be given a greater weight than such limited experience would justify:

1. We wish first to acknowledge the openness and eagerness with which the clinical ecologists and other professionals received us. Everyone we met was extremely cooperative and hospitable. Even more important, they were willing to discuss and demonstrate their work and to explain the approaches they have adopted in their practices. We were given free access to patients in both inpatient and outpatient programs; at no time did we have to be concerned that information was being withheld. In fact, most of the

doctors we met were quite open -- not only about the cases and approaches they felt had produced successful results -- but also about the limits of their knowledge and the areas of uncertainty, even concern, that exist within the field as a whole. For example, most of the clinical ecologists accept that there is a need for additional research to establish, in scientific terms, the efficacy of many of the tests and treatments now being employed.

2. The doctors we met demonstrated varying levels of awareness of the importance of nutritional counselling when the suggested treatment involved alterations to a patient's diet. Some were very skilled in that area or had well-trained people available; we noted that, when the nutritional adequacy of one particular diet for an Ontario child was questioned by the child's school, the clinical ecologist involved in the case sent the diet to two experts for analysis and that they assessed it as nutritionally adequate. Others did not seem to place a high priority on the nutritional effect of prescribed diets.

3. As a group, the doctors we met showed a high level of awareness and concern about the environment and about the effect it may be having on us. As individuals, clinical ecologists are increasingly

uneasy about the possible effects of an ever-more polluted environment.

4. Some of the clinical ecologists we met appeared to accept uncritically the thesis that environmental factors are the cause of symptoms presented to them by their patients. In some cases this seemed to amount to a predisposition in favour of environmental hypersensitivity.

In our opinion, this could not be justified simply on the basis of how patients had come to the attention of clinical ecologists. Those referred to inpatient environmental units were generally patients for whom the diagnosis of environmental hypersensitivity had already been made by clinical ecologists in the patients' home communities. The pre-selection process is much less clear and uniform for those who sought help on an outpatient basis. We were concerned when we were told that nearly 100 per cent of one practitioner's patients had symptoms attributable to environmental hypersensitivity.

In making that observation, we should add two other points: first, it must be acknowledged that this predisposition toward a particular diagnosis is probably not unique to this specialized area of medicine. Furthermore, our experiences varied: in

Ontario, for example, we encountered a number of practitioners who were quite careful in their approach, who did not leap to environmental explanations and who took a conservative, gradual approach in searching for possible food and chemical sensitivities.

5. We were impressed by the calibre of medicine practised by some of the doctors we met, quite apart from their work as clinical ecologists. Examples of this were readily apparent in the case work described to us by some Ontario practitioners and in our observations of the Dallas program.

6. Given the great emphasis placed on sublingual and intradermal end-point titration testing as a diagnostic tool -- either alone or as a means of verifying histories taken from patients -- we were surprised to note that tests were often carried out in a much less controlled fashion than we had anticipated. We observed no double blind testing and no use of placebos. In both the United States and in Ontario, we observed testing that was carried out in a single blind manner; we also observed testing in both places that could only be described as open. This was of particular concern to us, given the subjectivity of the measurements that are used to determine patients' reactions to the testing and given further the major

decisions that a patient may be asked to make on the basis of those results. Our concern carried over to the area of treatment by neutralization where, once again, we found that the process was often quite open and subjective.

In some cases, patients, particularly those in environmental units, also undertook food and chemical challenges. We were told about, but did not observe, double blind chemical testing performed in Dr. Rea's unit in Dallas and Dr. Brostoff described a double blind food challenge that he uses in his practice. We accept the statement of some practitioners that limits on the type of testing that can be carried out are sometimes dictated by a given patient's ability to bear the costs of such investigations. Moreover, the work done prior to referral to the clinical ecologist may suggest that subsequent testing need not be as precise as might otherwise be required. However, these factors do not eliminate the concerns we have as a result of our direct observations of the testing procedures.

7. Our observations also raised a number of questions about the extracts used, both for testing and treatment purposes. Understandably, those extracts are free of preservatives. However, in talking to physicians who

use such extracts, we found little awareness of the possibility that an absence of preservatives may cause problems with regard to stability, sterility and reliability.

For instance, there seemed to be little hard information about the stability of the extracts over time. Moreover, we wonder how sterile they were, with no anti-bacterial additives, after extensive use. In addition, the relatively crude method of preparation of some of the extracts (e.g., diesel fuel extract that is prepared in Texas) raises questions about the reliability of the resulting product.

8. From our observations and the reports of many patients, it appeared that doctors practising clinical ecology are warm and sympathetic and that their attitude has a very positive effect on the patients. Patients confirm that they are listened to attentively. Doctors seem to make a substantial effort to treat each patient as a partner during both diagnosis and treatment. From our observations, longer appointments seemed to be the norm, with heavy emphasis on the histories presented by the patients.

9. Throughout the field, there seemed to be great acceptance of what might be called "fringe" or

scientifically unverified testing and treatment methods as long as patients reported they were satisfied. One example of such a treatment is the broad use of intravenous injections of high dosages of vitamin C to deal with acute reactions to foods or chemicals. As noted earlier is this report, many patients have sought help through a very broad range of therapies and treatments beyond those offered by clinical ecologists. Some of the clinical ecologists we met were very supportive of such practices despite the absence of good data that would demonstrate their efficacy. In addition, there seemed to be a willingness on the part of some practitioners to accept new techniques or technologies (e.g., the Vegatest machines), though there is no clear theoretical explanation for the results said to be achieved through their use.

10. Based on our observations, we believe that patients with a considerable variety of problems present themselves to clinical ecologists for treatment, particularly on an outpatient basis. Not only is the range of symptoms wide (see chapter 2), but the severity of illness ranges from the very slight to the very serious.

While a number of patients had been pre-selected by other clinicians as possibly environmentally hypersensitive, it is also true that a number had not been to many (if any) doctors before consulting a clinical ecologist. As explained in chapter 5, this is understandable, given the diverse ways patients hear about and seek help from clinical ecologists.

These general observations, based on our contact with practicing clinical ecologists in the limited time available for such visits, are all that are possible under the circumstances and it must be recognized that each one is not necessarily applicable to any individual practitioner. Nonetheless, the Committee found this aspect of its work helpful in the process of formulating its findings and recommendations.

Chapter Five

Patient Submissions

The Committee heard from many patients and those close to patients, sometimes as a result of personal contact. However, the bulk of the information came from letters and briefs written to us. We were surprised at the number of patients (607) who wrote, often sending lengthy and detailed descriptions of their medical histories and of the various treatments and interventions they had found successful or unsuccessful; we heard as well from parents, spouses, relatives or friends of patients.

This chapter is a summary of the information we received from patients and other concerned persons. Appended to the report is a summary of submissions (Appendix 3), as well as a brief analysis of 147 of the patients' letters. (Appendix 4)

We have drawn a number of general conclusions from our review of the briefs and from the meetings we had with individual patients and with such advocacy groups as the Parents of the Environmentally Sensitive.

Before setting them out in more detail, the Committee wishes to acknowledge two limitations to the information we received. The first and most obvious is the fact that it is entirely anecdotal; we did not attempt to verify it independently. However, that does not render it unimportant nor did it lessen the impact on us of the often unhappy, sometimes tragic, stories we were told. As will be seen, certain of our recommendations are supported by reference to this important patient information.

Nonetheless, we do recognize that what follows is limited and we do not want any assumption made that these patient histories, in themselves, are proof of the existence of the specific disorder or illness we have been asked to examine.

Second, it should be noted that we heard disproportionately from those patients who have found or who are finding success with the approaches and treatments prescribed by doctors practising clinical ecology. This was probably inevitable, given that the major focus of our inquiry was seen as directed at the tests and treatments used by clinical ecologists and that patients were encouraged by clinical ecologists and others to write to the Committee. It is therefore impossible to know how a randomly chosen group of patients with similar symptoms would have responded.

A further preliminary point should be made: because of our acute sense of the enormous suffering and personal distress that many patients have endured, with the authors' permission, we have appended to this report, as Appendix 5, three letters that are examples of the kinds of stories we were told by the more severely ill patients. They spoke of increasingly severe symptomatology, accompanied or followed by lengthy and costly treatment, often involving major environmental or social change. Some have not had any amelioration of their condition, even after several years of illness and after exposure to a bewildering number of treatments and interventions. These personal histories played a major role in convincing the Committee that there are a number of very sick people in Ontario for whom various kinds of support should be available -- notwithstanding any ongoing debate about the cause of their condition.

The following is a review of information given to us by patients and others.

1. As a group, patients presented an impressive number and range of symptoms said to be the result of

exposure to foods or chemicals. A list of them is included in Appendix 4 to this report; they show that all the systems of the body are involved and physical, mental and emotional complaints are evident. Consistent with the literature, the most commonly described symptoms included: "brain fag" or spells of mental confusion, gastrointestinal tract difficulties; eye, ear, nose and throat problems; respiratory problems; cardiovascular irregularities; skin disorders; genitourinary problems as well as muscle, joint and bone pain.

A list of offending foods and chemicals is equally impressive and is also included in Appendix 4. The most common foods included: milk, eggs, beef, pork, corn, salt and chocolate. The most common chemicals included: diesel fuel, phenols, food preservatives, perfumes, household cleaners, and synthetic fibres. In some cases, one environmental agent was identified as the primary or only causal factor; more often, though, patients named quite long lists of substances said to be contributing to their illness. A growing number of persons believe that fungal infections, particularly Candida, are responsible for their increased sensitivity to environmental agents.

Not only was there enormous variation in the symptoms reported, but the severity of patients' illnesses also varied. While some presented as very seriously ill, many had symptoms that were much less severe. A very great range was evident in just those patients we met personally or whom we observed at the offices of individual clinical ecologists. Much of this chapter comprises an outline of common features the patients described to us, but it should not obscure the fact that, from our observations, this is not a homogeneous population. Media presentation of individual cases perhaps distorts the overall picture.

2. As a group, those patients we met in physicians' offices or in environmental units and those who wrote to us impressed us as articulate, well educated and well read on environmental issues generally and on environmental hypersensitivity in particular. Many more women than men were represented and the overall socio-economic level of patients seemed higher than that of the general population.

Some of those demographic impressions can be explained by other factors: we heard primarily from those who are receiving treatments not covered by the Ontario Health Insurance Plan; this alone probably skews the socio-economic picture of the patient population. Furthermore, we sought input in a way that biases the response in favour of those most apt to know of our existence and most able to develop briefs and submissions for the Committee.

Now, more than ever before, articles and stories about environmental concerns, about the plight of individual patients and about the work of clinical ecologists and others appear in the popular press. This has produced a patient population that feels more knowledgeable about such issues than it would if the disorder was of a kind discussed only in medical texts and learned journals. It is difficult, of course, to say how much the features of our patient sample can be ascribed to these factors rather than to some unique characteristic of people who suffer from environmental hypersensitivity. The only feature of the patient population that has been noted elsewhere and that does not appear attributable to any of the above factors is the presence of many more women than men.

3. Notwithstanding the above, we were struck by the almost accidental way many of these patients first began to see their problem as possibly being environmental hypersensitivity. They told of having met someone who had heard of the work of clinical ecologists or who had been a patient. They happened to have a family practitioner who was aware of the diagnosis and who knew of a clinical ecologist to whom

one could make referrals. They watched a television programme that dealt with the problem or read a newspaper article about an individual patient. They lived in one of the Ontario communities where a clinical ecologist practises or where there is an established local association, such as a Human Ecology Foundation. (It appears that there are parts of the province in which there is above-average interest in the topic, as well as substantial publicity about the issue and a concentration of patients, e.g., Toronto, Ottawa-Carleton, Kitchener, Niagara Falls). Many patients were unhappy at the haphazard way they had obtained information they subsequently found to be extremely valuable.

Beyond this, they were concerned about the enormous difficulty they experienced in securing balanced information on the subject of environmental hypersensitivity. It seemed to many people that they had been caught in the midst of a growing debate between different parts of the medical profession. The literature and public discussion the debate engenders is enormously confusing to them and seemed to range from total endorsement of environmental hypersensitivity to absolute rejection, with few examples of objective analysis in between.

Patient confusion was perhaps best exemplified by the different perceptions they had of research in the field. Almost everyone seemed to have heard of or to have read stories about research that demonstrated the truth of the positions held by them or by the persons treating them. The few who had heard of research that reached the opposite conclusion had been told that the methodologies used in such research had been criticized in other studies.

Understandably, there was a tendency to embrace texts and articles that used easily grasped language in discussing the illness and one or more of the theories of causation. A recurring complaint was that the controversy within the medical profession was readily apparent, that it appeared to affect seriously the ability of patients to obtain financial assistance or other supports -- and yet patients were virtually unable to obtain objective analyses of the issues.

4. Given the variety of symptoms reported to us and the wide differences in the severity of the illness, it is not surprising that it is difficult to describe the stages of a "typical" case as reported to us. For some, symptoms seemed to develop in a slow and gradual manner, a process that is consistent with the view that the illness is caused by chronic, multiple, low-dose

exposure. In others, a major precipitating event could be easily identified -- perhaps a large amount of pesticide sprayed in the work or school environment or perhaps a move to a larger, industrial, urban area or perhaps the introduction of a drug or other chemical ingested as part of a medical investigation or treatment of another illness. We noted that many connected the onset of serious difficulties with a recent viral illness of some sort.

5. The patient histories we reviewed highlight the increasing degree of medical specialization as our understanding of illness and its treatment becomes more and more complex. Many of those who wrote to us had lengthy medical histories and had seen a number of specialists in their search for a firm diagnosis. The patients in our analysis had, on average, consulted six medical practitioners each.

We note that patients we met at the offices of clinical ecologists had less lengthy histories of prior consultation with large numbers of doctors.

6. In general, the patients we heard from were quite critical of those doctors who practise so-called "traditional" medicine. Some of their feelings were the result of frustration at dealing with specialists

who had been unable to diagnose the cause of their illness, often after extensive testing. Their unhappiness was often compounded by resentment at the suggestion that a psychiatrist should be consulted because the illness appeared to be psychiatric in origin. The major complaint of others was that the doctors they had seen were unaware of environmental hypersensitivity or were openly critical of doctors practising in the field of clinical ecology.

For some patients, the larger issue was this: "traditional" practitioners are perceived as over-reliant on drug therapies and unwilling to be open to a more holistic treatment approach and to so-called "alternative" therapies that patients were finding helpful.

At the same time, we wish to stress that a number of patients greatly appreciated the efforts made by their family practitioners and by the specialists to whom they were referred, in an attempt to find the cause of their presenting symptoms.

7. As shown in the sample letters appended to this report as Appendix 6, many submissions dealt with the costs associated with both diagnosis and treatment. Some of those who contacted the Committee attempted to compare the estimated costs of diagnosis and treatment

of those interventions covered by the Ontario Health Insurance Plan and of those therapies not covered by OHIP but ultimately found helpful by the patient. For the more severely ill patients who had been hospitalized and treated by many specialists, the comparisons were quite impressive.

Patients were not alone in making these comparisons. Many of the clinical ecologists with whom we met or who wrote to us said that they find the treatments they now employ less expensive than those they previously prescribed. Attached to this report as Appendix 2 is a letter from a British physician who strongly makes this point. (See also Krop, J. "Future Prospect of Preventative Medicine Cost Effectiveness" In press, July, 1985.)

As might be expected, there was general dissatisfaction with the fact that, in a province where medical care is perceived to be a universally insured service, certain physician-prescribed treatments are not freely available. Fuelling this sense of unhappiness was the realization that many very expensive, fully insured interventions had been tried and found not to be helpful.

For most patients, the major expense was the amount they were incurring for tests and treatments. The costs of individual testing procedures and of extracts used in neutralization therapy seemed to vary considerably. In addition, there was often the expense of regular appointments at which their neutralization levels were checked.

The expenses incurred by patients often go further: the use of organic foods is normally part of any diet manipulation and such foods are often costly and difficult to obtain. Substantial expense may be undertaken in order to obtain water that is considered drinkable. The recommended course of action for a number of people involves minor environmental changes: home oil heating units are replaced with electrical heating. Rugs and other items made of synthetic fibres may have to be removed from the home. The ventilation system may need alteration. Or the treatment recommended for some patients may involve major adjustments in their work and home environments: an employee terminates his employment or a student leaves school and a new home is found as far as possible from the offending elements in the environment.

Many patients who wrote to us described the struggle to meet expenses associated with what was often a long and arduous treatment process. In the cases we analyzed in detail, patients bore an average annual cost of $4,463.00 for the types of procedures described above; the minimum reported cost was $400.00 and the maximum was $12,378.00.

Patients confirmed that OHIP does not cover the major tests and treatments performed by clinical ecologists. However, information about access to treatment by others was much less clear.

A small number of persons had become inpatients at environmental units in the United States. We estimate that 20 to 30 patients have been referred to these programs and have made the trip, generally to the units in Chicago and Dallas.

OHIP covered the costs of transportation if an air ambulance was necessary; in addition, the full OHIP standard ward charge was paid. The physicians treating the patient are paid as a physician in Ontario would be, according to the Schedule of Fees. Investigations that are listed in the Schedule and are carried out are also paid for at the same rate. The amount paid may be considerably less than that charged to the patient, particularly at a time when the disparity between

Canadian and American currency rates is so great. Moreover, tests not covered in Ontario are not covered by OHIP when performed in the units themselves.

Although these restrictions on payments are part of stated policy, we were advised of cases in which the patient's full costs were paid. We were unable to determine whether this was through inadvertence or because an agreement to pay was negotiated in advance.

A number of patients had access to private insurance plans that cover medical expenses and drug costs not paid by OHIP. From the histories presented to us, it would appear that the items covered by such plans vary widely. Some include the costs of tests and treatments prescribed by clinical ecologists. Many do not. Some appear to place limits on the amount or the length of coverage. We encountered a small number of cases in which the costs associated with special, prescribed diets were allowed. In general, it seems that the position of private insurers has become more restrictive in recent years as the number of claims has grown and the controversy over clinical ecology has become more public. This is parallel to similar developments in the United States.

8. The information we received regarding the patients' access to social assistance programs was even more varied and confusing. Some persons had been able to secure assistance under the Family Benefits Act on the grounds that they were disabled or permanently unemployable. They were few in number and, generally, they had been accepted only after a protracted and frustrating claims process, which often included appealing to the patient's local provincial member for assistance. Some of the most seriously ill persons we encountered had not been recognized as disabled. It appeared that an individual patient's success often depended on the response of the doctor who functioned as a regional member of the Community and Social Services Medical Advisory Board and, even more, on the attitude of the doctor to whom the patient was referred for a second medical opinion.

There were similarly mixed results when claims for Workers' Compensation were made by those who alleged they were unable to work as a result of reactions to substances encountered in the workplace. Some received coverage, most did not. Here, of course, the patient had the added task of demonstrating that his or her disability was work related. Once again, the attitude of the individual doctor to whom the patient was referred for an independent medical opinion seemed to have a major impact on the result.

Interestingly, many patients and patient advocates were aware of which specialists were sympathetic and which were perceived as strongly antagonistic to the claims of clinical ecology. In some cases, an application for financial assistance had become stalled in acrimonious debate about which "independent" doctor was acceptable to the patient and to those reviewing the claim. As an illustration of the fluidity of developments in this field, it is worth noting that during the short term of this Committee's work, some doctors were perceived as moving from being opposed to being supportive.

A number of patients were receiving general welfare assistance, although we heard stories of strong resistance from individual local welfare administrators. Some patients sought funds for food supplements in order to ameliorate the cost of prescribed rotation diets. At this point, we know of no successful applications for such funds. We were advised of one patient who has been awarded a disability pension under the Canada Pension Plan.

It was clear to us that, particularly for the financially weakest patients, the pathway to financial assistance is complex and is successfully traversed in only a small percentage of cases. The cases that troubled us most were those of persons living socially isolated lives; with almost no financial resources; who are unable even to choose doctors they think can help them and who are constantly denied access to basic social assistance programs on the grounds that a disability that seems distressingly real to them simply does not exist.

9. Patients and those close to patients spoke of problems that extended beyond those listed above. Included among them is the extensive time and energy that has to be devoted to simple management of one's life following a diagnosis of environmental hypersensitivity. It ranges from the inconvenience of looking for and buying organic foods to the extensive efforts made by parents to educate others about the needs of their children, to the kind of massive reorganization of one's life that can be required in order to avoid exposure to the offending substances. The social isolation and the loneliness that results from avoidance approaches was described movingly in some submissions. Several persons we spoke to had not left their homes or had not been to a restaurant or a movie or a social gathering in several months, sometimes even longer. Some patients are so restricted they are not able to have physical contact with their

own family members.

Several letters, especially those written by close family members, spoke poignantly of what happens to the family as a whole when one member is seriously ill and unable to be part of normal family activities. The absence of support groups or access to persons with similar difficulties was often mentioned as a factor in isolating patients and their families.

There are a growing number of branches of the Human Ecology Foundation of Canada in Ontario; the Allergy Information Association has been in existence for 20 years. Recently, advocacy groups such as the Parents of the Environmentally Sensitive have been formed and are actively lobbying for greater assistance for these patients. Certain individuals have been particularly active in providing assistance, information and emotional support to patients. We are especially aware of the efforts of the Nikiforuk family, including Christian Nikiforuk (despite an ongoing and serious illness), of Darlene Koski, Barbara Mowat and Bruce Small -- among a long list of others.

9. Many patients said that the most important event in their illness was the point at which it was identified, either by themselves or by a doctor, as

environmentally induced. Many stress the enormous relief and satisfaction they experienced from receiving what seemed to be a firm diagnosis; that feeling was enhanced if the diagnosis repudiated psychiatric or psychological explanations for the patient's symptoms. It is difficult to overstate the importance patients attached to this event. It did not seem to diminish appreciably even in those cases where the treatments they then received did not produce sudden or extensive relief.

10. As has already been noted elsewhere in this report, the range of therapies patients found helpful exceeded all our expectations and extended well beyond the specific treatments undertaken by clinical ecologists. While many patients discontinued their search after finding those treatments helpful, others sought further alternative help at the same time that they were undertaking the treatments prescribed by clinical ecologists or after they had completed a course of treatment under a clinical ecologist. Apparently, a number of patients sought these therapies by themselves while others were referred by the doctors treating them. For some, the search through the so-called "fringe" areas of medicine seemed as lengthy and as frustrating as the earlier search through a wide range of medical specialties. A list of the therapies

mentioned to us is appended to this report.

11. Almost all of the those who were being treated by clinical ecologists and who wrote to us spoke favourably of their doctors and of the treatments. A few were less enthusiastic and were somewhat suspect of the field as a whole; however, we heard from very few patients who were strongly critical of the work of the clinical ecologists they had consulted. We do not know the extent to which that was because of the unique characteristics of the patient sample who contacted us. (Some individual patients did tell us that they knew of cases in which the work of the clinical ecologist was perceived as costly and not helpful.)

Some patients simply avoided one or more of the offending substances and said that recovery was immediate. At the other extreme, there were many patients for whom recovery was described as gradual and lengthy, often interspersed with numerous setbacks. Many letters and submissions described how patients accepted "a lifelong problem" that could recur in a more severe form at any time.

We were somewhat surprised at how easily and willingly some patients accepted costly and extremely inconvenient changes that had been prescribed for their lives, even when the initial results were not as impressive as they had anticipated. Two factors seemed to contribute to this continuing sense of satisfaction: the fact that the cause of the illness had apparently been identified and the belief that the symptoms would have been much worse without the prescribed treatment.

12. Our patient sample included a number of children. Appended to this report, as Appendix 7, is a letter from a mother and father describing their children's illnesses and the efforts made to deal with them. It was our impression that the above-noted controversy and confusion in this field was particularly troubling for parents, who, understandably, are often desperate to find relief for their child's symptoms. It is easy to understand that many, although not all, of the parents we heard from seemed to be uncritically accepting of diagnoses and treatments. We also noted that parents whose children had been diagnosed as environmentally sensitive spent a considerable amount of time describing to others the child's illness and the measures they wished taken in looking after the child. Some parents were faced with the difficult task of administering intradermal treatments; others spoke of the problems involved in keeping a child on a special diet. This was not only difficult but a number of parents had a continuing concern about the nutritional

adequacy of a restrictive diet during an important developmental stage of a child's life.

13. We received a number of submissions that complained of problems associated with exposure to cigarette smoke. Several dealt with what was perceived as a broader problem of indoor air quality. A host of other environmental issues were raised in the submissions we received, including concerns about the effects of pesticide spraying, PCB's and other toxic elements in our drinking water, about fluorescent lighting, urea formaldehyde insulation and junk foods.

14. Patients and others made many recommendations dealing with an impressive range of issues. We have reviewed all of these and some are endorsed by us in the chapter (number eight) that sets out our recommendations. Rather than summarizing the suggestions or listing only those the Committee adopted, we have decided to append to this report as Appendix 8 a list of all of the recommendations we received. We feel this is important information the Ministry of Health should have as it determines how to proceed.

Chapter Six

Diagnostic Methods

A. Observations From Site Visits

Five Committee members visited both the out-patient and hospital facilities in two environmental control units in the United States. Two members visited a clinical ecologist in Toronto, while two others observed testing techniques employed in an Ottawa-area physician's office.

The testing procedures observed in each practice included intradermal and sublingual end-point titration with neutralization; while there was some variation in technique, the methods employed were, in general, very similar to those described in various publications. In addition, intranasal challenges were conducted during the Toronto visit.

The Committee discussed testing procedures at length at its February meeting with clinical ecologists. A questionnaire was distributed to them; a summary of responses was given to us by the Secretary for the Canadian Society for Clinical Ecology and Environmental Medicine and, in addition, two physicians responded individually. The responses indicate that the testing methods being used by the physicians attending the meeting included sublingual and intradermal end-point titration procedures; and nasal, oral and inhalation challenges. Single-blind tests using placebos were employed by several physicians, although we did not observe the use of placebos in our Ontario visits. At least one person is using cytotoxic food testing, although the Canadian Society for Clinical Ecology and Environmental Medicine does not endorse that particular test. Apparently, hair analysis is rarely used.

Use of Vega II type machines in Ontario was described to the Committee; it would seem that several variations of this machine are available. However, attempts to observe it in actual use were not successful.

B. Summary of Literature Reviewed

Within the allotted time, the Committee attempted to obtain as much information as possible about diagnostic testing methods; this chapter is based on the information contained in eleven books, 48 published articles, six abstracts and in several personal communications reviewed and discussed by Committee members.

C. Diagnostic Methods That Were Considered

The methods used to diagnose environmental hypersensitivity varied somewhat amongst different practitioners. Accepted methods are described here first and are followed by a description and discussion of more controversial tests used by clinical ecologists.

1. History-taking

All the physicians we interviewed assured the Committee that a patient's history is a very important tool in reaching a diagnosis of environmental hypersensitivity. Most use a questionnaire that includes many questions about exposure to the environment, and about the patient's dietary habits. This is supplemented by the physician's review and by careful documentation of that history.

No universal method of history-taking exists and each physician uses whichever technique seems most suitable to him or her. However, we are under the impression that, in eliciting information from patients, clinical ecologists place significant emphasis on exposure to those elements, like paint fumes or chemicals, that could be considered harmful. Committee members discussed whether, in view of this emphasis, doctors give sufficient attention to other relevant historical facts that might explain the patient's illness. The question is impossible to answer with finality but, in any event, we did not discover any evidence to suggest that this is a problem in regard to Ontario practitioners; it appears that information was gathered carefully by the doctors we interviewed and that they believed they were obtaining all relevant facts.

2. Physical Examinations

The physical examination is usually a routine part of the investigation; most doctors told us that they found, on examination, that those with environmental illness were within normal limits; the physical, therefore, was used most frequently to rule out other organic illness.

3. Routine Laboratory Tests

Routine laboratory tests -- for example, hemoglobin, white blood cell count, blood sugars, liver function tests and x-rays -- were often used in investigating patients. It was our impression that a large number of tests were ordered, mainly to rule out other illnesses rather than to make a specific diagnosis of environmental hypersensitivity. The physicians in Dr. Rea's organization, for example, said they ordered perhaps 200 tests on each individual and that the results of the majority were within normal limits. There was no indication to us that any specific routine lab tests indicated the presence of environmental hypersensitivity.

4. Blood Tests for Normal or Abnormal Aspects of Immune System Function

All such tests are insured by OHIP, except the RAST test. Total serum IgE, T & B cell studies, as well as measurement of serum immune complexes, are used by some physicians and are considered valid in testing for several medical conditions.

a) Serum IgE: The immunoglobulin classified as IgE (epsilon) has been documented to mediate immediate (allergic) hypersensitivity reactions. (Ishizaka, 1967). The measurement techniques currently in use are accepted as valid and reliable. The total serum IgE tends to be raised in patients with eczema hayfever or asthma. (Middleton et al., 1983).

IgE levels are either normal or low in patients with environmental hypersensitivity. As discussed in chapter 2, a number of clinical ecologists who feel that many food and chemical sensitivities are not IgE mediated (Bell, 1982), believe that this low level is consistent with environmental hypersensitivity.

The test, therefore, is thought to be useful in different ways, tending to show elevated levels in IgE mediated illnesses and normal or low levels in environmental hypersensitivity. The Committee was unable to find scientifically acceptable studies to verify the thesis that lows levels can be seen as predictive of environmental hypersensitivity.

b) RAST: The radioallergosorbent test (RAST) is used to give a quantitative estimate of Ige antibodies directed against a defined allergen. It gives information similar to that obtained from the standard allergy skin test.

The RAST test has a number of advantages: lack of patient risk; objectivity; qualitative results. Furthermore, results are not affected by simultaneous use of drugs, such as antihistamines. It can be used on persons with diffuse dermatitis or dermatographism, for whom skin tests are not helpful.

Disadvantages of the test: it is less sensitive than the skin test for some allergens and it is much more expensive. (Middleton, et al, 1983).

The RAST test is sometimes used by clinical ecologists to rule out Ige mediated illnesses; it is usually negative in patients diagnosed as environmentally hypersensitive -- a further suggestion that the mechanism is not related to the Ige system. (Bell, 1982).

c) T & B lymphocytes, numbers, subsets, functions: Methods of measuring numbers and functions of the the T & B cell systems have become available in the past several years. The T-cells are involved in delayed hypersensitivity responses and, in addition, have a regulatory role in antibody production. The system is quite complex and assays are difficult. T-cell types include helpers, suppressors, null cells and killer cells. The B-cell system is involved in the production of various types of antibodies, with specific T-cell helper and suppressor clones for each antibody. The system is in dynamic equilibrium, with many modulating influences, including genetic and environmental factors.

According to one theory (discussed in chapter 2), abnormalities of the T-cell system of regulation, with decreased suppressor T-cell function, lead to abnormal B-cell activity and subsequent overproduction of antibodies. (Rea, 1978). Therefore clinical ecologists are interested in T-cell and B-cell functions as a possible explanation of some symptoms in patients.

Measurement techniques include blastogenesis (induction of cell division) using substances such as lectins or antigens. Cells are stimulated to subdivide; DNA is usually measured as an indicator of active division. It has been shown that antigen reactive T-cells can function in the absence of proliferation and that absence of cell division may not correlate with absence of function (Middleton et al., 1983). The products of the stimulated T-cells (such as lymphokines) can also be measured, and this test does correlate well with delayed hypersensitivity activity. The regulating function can be measured by in-vitro functional assays, usually involving the mixture of T & B cells and determining a marker such as antibody production. As well, each type of cell can be quantified by using monoclonal antibodies directed against certain cell membrane determinants in each population of cell.

We have not been able to find any studies that demonstrate that abnormalities in the T & B cell system are predictive of environmental hypersensitivity.

d) Immune Complexes and Complement: The concept that circulating immune complexes, (antigen-antibody) can be pathologic was first suggested by Von Pirquet and Schick in 1905. Circulating immune complexes (CIC), have been studied extensively and there are now at least forty assays that have been used for detection of complexes of various types in, perhaps, a hundred diseases (Middleton et al., 1983). Each assay is limited, in that certain types of complexes will be measured and others will be detected. The variables include the nature of the antigen and the type of antibody involved in the complex. Complexes vary significantly in size and size plays a role in the activity of the CIC. A further factor is the site of activity of the CIC: for example, it may activate the complement system in the blood or may be active on a certain tissue receptor.

Perhaps the most important question is whether the presence of the complex is the cause or a consequence of disease; for example, complexes have been demonstrated after the ingestion of milk with no evidence of pathology and no symptoms in persons with IgA deficiency. (Middleton et al., 1983).

While it has been suggested that immune complexes are associated with environmental hypersensitivity, the mechanism has not yet been defined; some possibilities are discussed in chapter 2. McGovern (1980) has reported that, compared to normals, immune complexes are elevated in patients with food and chemical sensitivities. Brostoff (1979) has presented evidence of the presence of IgE complexes induced by allergen challenges. These results are preliminary and, at present, do not provide a satisfactory explanation for environmental hypersensitivity.

The complement system may be activated by some complexes and it has been suggested as one mechanism for environmental hypersensitivity. Trevino (1981) reported that the C3 and C4 components of complement decreased in patients who were challenged with foods. The foods were selected by the leukocyte cytotoxic test; no statistical analyses of the evidence were presented in the article. Rea (1978) has also suggested abnormal activation of the complement system in some of his studies.

Martin et al., (1984) studied complement levels in a double-blind food challenge study of 23 children suspected of having reagin mediated positive food sensitivities. He found an increase in certain complement levels in some of the positive food challenges and decreases in several negative challenges. He concluded that, at present, serum complement measurement was not a useful test for suspected food sensitivity.

As noted in chapter 2, the literature is still very inconclusive on the importance of circulating immune complexes and the role of the complement system in the explanation of environmental hypersensitivity. This in turn raises questions about the present value of testing in this area.

5. Blood Tests For Trace Substances And Nutrients

Biochemical techniques have now been developed to measure some substances in human tissues in quantities as small as parts per billion. These techniques can be used for both normal nutrients, such as vitamins, as well as for potentially toxic substances, such as pesticides. There are a number of possible sources of error in the determinations, including contamination of the sample during collection, during storage and, particularly, during the preparation for measurement. When done properly, biochemical techniques are generally accepted as being accurate, reproducible and reliable. The illnesses caused by a high-dose, toxic exposure to some of the pesticides are well recognized and are accepted by virtually all medical practitioners. A number of clinical ecologists feel that low-dose exposure may have adverse effects contributing to environmental hypersensitivity disorders. They advocate screening patients' sera for many chemicals, including chlorinated hydrocarbons. As noted in chapter 2, we still have a great deal to learn about the possibly adverse effects of low-dose exposure or of the presence of very low concentrations of these substances in humans.

There is only limited evidence to support the thesis that there are adverse effects from very low-level exposure. Rea (1984) and his associates feel that even levels in the range of 0.05 parts per billion, (PPB) may be harmful. They reported a correlation between improvement in brain function and decreasing levels of some pesticides during treatment in an environmental control unit. The accuracy of the results is difficult to assess because there was no control group and because statistically significant changes occured in relation to only four of the fifteen pesticide residues measured. Laseter (1983) reported the presence of pesticide residues in the sera of 99 per cent of 200 randomly selected environmentally sensitive patients; the levels were at or above the 0.05 PPB level. No control group was included in this study and Rea notes that comparisons are difficult because of differences in methodology. He does comment that the findings are "similar to those reported for the frequency of chlorinated hydrocarbon pesticides in body fat of the United States population".

As illustrative of how little we know in this area, it should be noted that both Barnes (1975) and Hindmarsh (1983) state that certain trace substances are essential for optimal health; some substances, such as selenium, may be beneficial in low doses and toxic at higher levels. Hayes (1975) discussed at some length the evidence that small doses of many compounds are beneficial even though larger doses of the same compounds may be injurious. Most of this evidence is from plant and animal studies and he comments on the difficulties of designing human studies.

The availability of sensitive biochemical techniques means that further studies of either the beneficial or toxic effects of various doses of these elements are now possible. At present, the diagnosis of human illness related to either toxic or decreased levels of factors such as pesticides, or nutrients rests with careful analysis of the patient's history including pertinent exposure, plus the physical examination.

6. Challenges

a) Oral Challenges: Despite problems in administration and interpretation, oral food challenges are generally accepted as useful diagnostic tests. The problems include: the amount of food given; the method of administration; adequate blinding of the patient and the observer; the choice of placebo and, finally, measurement or assessment of the response. There is also some debate about timing of the reaction and how long one must wait before deciding that the test is negative. Some practitioners feel that food may cause an adverse reaction up to two days after the challenge.

The double-blind technique, using a challenge that approximates an ordinary meal combined with a previously proven true placebo, has many advantages but is technically very difficult. A number of researchers have used the technique or have used smaller quantities of food or placebos in opaque capsules. This provides adequate blinding for both the patient and the observer and eliminates the problem of recognition by taste. There is, however, a limit on the amount of food the patient can take in capsule form.

In standard clinical practice, an open challenge is often quite adequate, particularly if an objective change such as urticaria (hives) or asthma is caused by the food. Prior to the challenge, clinical ecologists often prescribe an interval of several days of avoidance of the suspected food. Various forms of oral food challenge are used by many practitioners and provide useful information for diagnosis.

b) Nasal Inhalation Challenges: The technique used for nasal inhalation challenges, as described to the Committee and as observed in the Toronto office of a clinical ecologist, consisted of having the patient inhale through one nostril a small quantity of powder or particulate matter; the amount of powder on the flat end of a toothpick was used. Substances tested included pollens, molds, household insect extracts and others. Following baseline observations, the patient inhaled the powder and was then monitored for both local and generalized effects. The development of symptoms or signs distant from the nasal mucosa might be considered a positive result. The Committee was not told of any neutralizing procedure associated with this test.

This type of challenge or modification of intranasal challenge has been used by investigators in the past and may show local positive reactions. It is certainly recognized as a method for testing IgE mediated sensitivity. If it is done carefully, this technique is valid. Local reactions involving the nasal mucosa or the respiratory tract are self-explanatory. More distant reactions -- if accompanied by objective signs, e.g., urticaria, or subjective symptoms, e.g., headaches -- might need repeated confirmation.

7. Indoor Air Quality Measurements There is abundant evidence that indoor air quality, either in the home or in the workplace, is an important determinant of human comfort. Indoor air quality has been studied extensively and there is a large body of information available on some of the factors involved. These include: humidity, temperature, light and ventilation. Excess humidity can lead to mold overgrowth in a building and can subsequently cause reactions that are often allergic in nature, including bronchial asthma in susceptible individuals. Low humidity may contribute to dryness of the mucous membranes of the nose or throat and perhaps lead to increased susceptibility to infections in the throat.

A comfortable temperature range and adequate, but not excessive, lighting are particularly important in order to maintain productive activity in the workplace. Abnormal levels of temperature or of lighting can contribute to absenteeism.

Ventilation is perhaps the most important human comfort factor in any building; people have been reported to feel quite uncomfortable, even if the air is clean, if there is inadequate air movement. The ventilation system is also vital in removing other potentially harmful substances -- such as tobacco smoke or carbon dioxide -- from the area. A ventilation system must be designed to fit the use made of the building; for example, one engineering standard requires an air change of 5 cubic feet per minute per person in a nonsmoking environment, but this is raised to 20 to 25 cubic feet per person if smokers will be using the room.

Many of these factors and other components of indoor air can be measured using existing techniques. The engineering principles and technology are available at present and, in many cases, they are very precise. Examples of other measurable substances are: formaldehyde, carbon monoxide, volatile organic gases, particulate matter such as asbestos and radioactive materials like radon.

The Committee feels that such measurements can be made accurately of the home or the workplace of an individual thought to be having adverse reactions. When medically indicated, these measurements should be considered as legitimate diagnostic testing methods.

8. Controversial Tests Used By Clinical Ecologists

The Rinkel method, serial intradermal provocative testing and sublingual provocative testing have a number of factors in common. The tests are described in the following section; the Committee was told that variations on these procedures are used by different practitioners.

a) Rinkel Method (End-Point Titration): This is used for determining sensitivity to a substance and also to establish a subsequent therapeutic dose. The tests start with weak, non-reacting dilutions and progress at about ten-minute intervals to stronger reacting dilutions (Willoughby, 1974; Miller, 1977). The substances are injected intradermally and the wheal is measured ten minutes later. A number of complicated skin test patterns of reaction are described by Willoughby; they include: normal response, flash response, linear erythema response, hour-glass reaction with a clear central zone, and responses with short or long plateaus. Each of these responses is used as an indication of a certain pattern of sensitivity.

The accuracy of the method in determining sensitivity to a substance, particularly to an inhalant allergen such as ragweed, is non-controversial. The technique, when used in this way, is similar to other systems of skin test end-point titration. This testing in now included as an insured service by OHIP up to a maximum of 50 tests per patient per year.

The controversial aspect of the technique is its use in therapy, i.e., in determining a starting dose and subsequently, a final therapeutic dose. This matter is reviewed in chapter 7.

b) Serial Intradermal Provocative Testing: This technique has been used for both diagnosis and for treatment of hypersensitivity disorders. A subcutaneous injection of the suspected substance is given and the patient is observed over an interval for symptomatic change. The patient may also keep a diary of responses based on observations of change in pulse rate or the development of any adverse symptoms. The wheal size is measured carefully and an increase in the wheal is an indication of a positive test. Different concentrations of the material are given to terminate any symptoms, i.e., to neutralize the reaction. An altered reaction is considered positive. A number of articles and texts describe the procedure in detail (Rinkel, 1963). The articles indicate that the end-point concentration can be used for therapy to either desensitize the patient or to prevent reactions.

Assessment of the literature regarding this type of test is somewhat difficult in that both the diagnostic and therapeutic aspects of the test are included in a number of reports. The following is a review of some of the available studies, with comments on their limitations.

Two of the studies with negative findings were never published as full articles. A study by Bronsky et al. (1971), of use of the technique on children with asthma due to food allergy was published as an abstract only. Crawford and colleagues (1976) judged that the subcutaneous provocative food test was invalid and unreliable. This study was published in abstract form. It is not possible to comment on the quality of this research without reviewing the full reports. Draper (1972) observed a high false positive rate associated with the intradermal provocative test for diagnosis of food allergy. His study involved a large number of subjects but it was not double-blind and controls were not used. The American College of Allergists (Caplin, 1973) evaluated the subcutaneous provocative food tests and found them unreliable. However, the statistical analysis was not appropriate and does not include all the subjects in the study.

One other study has been completed since 1983: Jewett and Greenberg conducted a double-blind experiment of intradermal provocative testing that was reported to the Society for Clinical Ecology in October, 1983 and as an abstract in 1985 to the American Academy of Allergy and Immunology. Committee members met with the principal investigator to discuss this protocol and the findings. It is important to note that both advocates and critics of intradermal provocative testing approved the research protocol and the study was conducted in the offices of clinical ecologists. According to Jewett, "the 'best' subject had T=0.12 overall, the results approximate a normal distribution centred on p=0.5, (pure chance)." There was no difference in the symptom provocation rate between placebo and experimental injections. Jewett contends that the placebo response is dominant and that the method cannot detect environmental hypersensitivities. The questionable validity of the methods used in this study has been noted by others as well (Williams, 1985). These are, however, the methods used by clinical ecologists. Jewett does not question the existence of environmental hypersensitivity; instead, the results of his study suggest flaws in the testing method.

A proponent of the technique, Willoughby, advocated intracutaneous provocative food testing in an anecdotal report published in 1965. Miller (1977) reported that food extract injection therapy resulted in an improvement of symptoms in patients with food sensitivities. This was a preliminary study only, involving just eight patients and a final report has not yet appeared. The outcome measure, based on scoring of symptom improvement, was highly subjective and, therefore, of questionable validity.

Rapp (1979) successfully used intracutaneous neutralization testing and sublingual therapy for hyperactivity related to food allergies. However, because of the small number of subjects involved in the study, it must be regarded as a case report. In an investigation of children with hyperkinetic syndrome, O'Shea and Porter (1981) found that intradermal testing for sensitivities, followed by sublingual treatment, was effective. Once again, the sample size was so small (15 subjects) that it must be viewed as inconclusive.

The Committee is of the opinion that these procedures are unproven at present and that further research is required to establish their accuracy.

c) Sublingual Provocative Testing: This technique is used, both for sensitivity and for deciding on the treatment dose of sublingual drops. A number of different methods are used, the most common of which consists of placing three drops of a selected dilution under the patient's tongue and then observing the development of symptoms for ten minutes; pulse rate can also be monitored during that time. A neutralizing dose to abolish symptoms is then calculated, using a more dilute material.

A number of problems are associated with the methodology used in this technique: some clinical ecologists believe that food sensitivity can change over time and that the patient must be sensitive at the time the technique is used. Another problem, this one related to the placebo, is the possibility that a patient may be able to identify the test substance by taste and the observer must measure the appropriate parameter in this regard. That is particularly important in dealing with children whose psychologic changes can affect the end point. In addition, there is the concept of masked sensitivity, suggested by Randolph (1978), who posited that symptoms related to frequently eaten foods might be masked. Therefore, perhaps five days should elapse between the last time the food is eaten and the time the test is given.
As already discussed in relation to intradermal

provocative testing, an assessment of the literature is difficult because the results in many studies include both testing and therapy.

In 1973, the American College of Allergists reported that the sublingual method of provocative testing for food allergy was unreliable and insensitive. (Breneman et al., 1973). However, the protocol used for the study has several flaws: criteria for the selection of subjects were not described; the testing procedure was not randomized; data on several subjects were missing and many of the data relating to the rest were rejected prior to analysis. A subsequent report included data from the 1973 study, as well as information about additional subjects (Breneman et al, 1974). The authors concluded that sublingual testing did not discriminate between placebo and food extracts, but the same limitations of the study still apply.

Hosen (1976) compared two methods of diagnosing food allergy and found that therapeutic fasting followed by challenge feeding was better than sublingual provocative testing. The major flaw of this study was that it was non-blinded. Lehman (1982), conducted a double-blind study oi sublingual provocative food testing that did not discriminate between placebo and food drops. The use of changes in nasal mucosa as the outcome measure is highly questionable and the sample size was small.

One of the more widely quoted negative reports was published as a letter to the editor (Kailin and Collier, 1971), thus precluding a critical evaluation of the research design and interpretation of the results.

Green (1974), suggests that sublingual provocative testing is useful for foods and FD&C dyes. He conducted 8,348 sublingual provocative tests on 506 patients, using the single-blind method. He found 368, or 4.4 per cent, positive reactions. These were confirmed, when possible, by history and by withdrawal and subsequent reintroduction of the substance. He concluded that further investigation to improve the technique and the allergens for testing is merited.

Three other studies support the sublingual method. All are seriously flawed. Green (1974) tested dyes and foods on a large number of patients but did not include a description of the subjects. King (1981) tested the hypothesis that greater psychological effects would occur on allergen than on placebo trials in patients with food allergies. One-third of the subjects were dropped from the study and were not accounted for in the analysis. Moreover, the double-blind conditions are suspect. King concludes that sublingual provocation induces psychological symptoms more frequently than placebo, but, in view of the two flaws mentioned, his conclusions may not be valid. More recently, Mandell (Mandell and Conte, 1982) tested the sublingual provocation method on patients with arthritic pain and he reported positive effects. He said that the testing procedure was double blind, but did not describe the method. Furthermore, the criteria used in selecting subjects were not stated.

The Committee received one further study on the sublingual method, by King et al (1985). It has not yet been published but has been reviewed in its final form; in addition, representatives of the Committee met with the principal investigator and discussed the findings. The investigators completed a double-blind experiment on the usefulness of the sublingual method as a test for foods that cause behaviour responses in children. Findings suggest that sublingual food challenges can produce both behavioural and cardiac effects in children with suspected food sensitivities.

The investigators acknowledge that the effects are minimal and subtle; for example, they report that the cardiac effect is a statistically significant mean difference of only 1.6 beats per minute between one of their food and placebo challenges, (X=84.6, SD=11.9 for food, X=83.0 plus or minus 12 for placebo.) This difference was limited to the two-minute reading and occurred only after the second of three challenge procedures. The authors do not advocate widespread use of this sublingual method of testing until their results are confirmed.

The Committee is of the opinion that these testing methods are unproven at present and that they require further research.

General Comments

The three techniques: the Rinkel method, when used to establish a therapeutic dose, serial intradermal and sublingual provocation testing, have been studied and reviewed by a number of authors who reached disparate conclusions. (Grieco, 1982; Podell, 1983). The evidence in support of the procedure relies heavily on clinical observations (Hiatt, 1975). Advocates acknowledge that the effectiveness of the procedures has not been proven by properly controlled research studies. (May, 1984; Bell and King, 1981; King, 1985).

All three procedures share certain problems:

(i) A lack of consensus about several aspects of these tests. Various methods are utilized by different practitioners; there is considerable variation in the degree to which physicians rely on these tests for diagnostic purposes and there is lack of agreement on which tests give accurate results for various substances. (Golbert, 1975).

(ii) A lack of consistency in identifying which indicators found in a patient's history, on physical examination and as the result of laboratory work, should result in testing.

(iii) A lack of consistency in the source of substances used in testing and in quality control of such substances, combined with a lack of information on the biologic activities present in those substances -- a matter of particular importance in regard to very dilute concentrations.

(iv) Symptoms, as reported by patients, that are used to define a positive test response are generally subjective and are not verifiable according to objective measurement.

(v) The use by physicians and technicians of a wide variety of observations to define positive test responses. A number of authors question the validity of changes in pulse rate (Bronsky, 1971a) and respiration rate; moreover, other positives are based on undefined observations, e.g., panic-type attacks, confusion, changes to handwriting.

(vi) The limited used of subsequent withdrawal, followed by controlled challenges to confirm test results. The results reported in Draper's study (1972) would suggest that this is necessary.

d) Cytotoxic Food Tests: The Committee was told that at least one practitioner in Ontario uses this test for diagnosis of environmental or food sensitivities despite the position paper of the Canadian Society for Clinical Ecology and Environmental Medicine that does not recommend this test.

The test consists of adding a substance, often a food, to the patient's blood cells and then observing changes in the cell structure. It was first described by Black (1956) and has been modified since; it has been the subject of many reports since its introduction and remains a controversial procedure for several reasons: interpretation is subjective; the test is time consuming; results in repetitive runs show a variation in results (Lehman, 1980b). There are problems of interpretation of cell changes and a lack of a concordance between two examiners, as reported by Lieberman (1975). The Committee agrees that this test is unproven at present.

e) Hair Analysis: The Committee was told that, in Ontario, analysis of hair for multiple elements is rarely used in the diagnosis of environmental hypersensitivity. There are laboratories where many elements in the hair can be analyzed and from which physicians receive computerized printouts describing which trace elements have been found.

Hair analysis is a standard diagnostic tests for arsenic poisoning; in his review, Hindmarsh (1983) cautions that arsenic binds avidly to the hair's outer surface and that, therefore, external contamination must be eliminated before this analysis can be used as an indicator of toxicity. Many other observations have been made regarding the presence in the hair of zinc, magnesium, copper, manganese, etc. No clear pattern has emerged and Hindmarsh states that "a practical use for hair trace element analysis in the diagnosis and management of diseases and nutritional disorders has yet to be proven." (Exceptions to this are chronic arsenic or uranium exposure).

Rosalind Gibson, PhD (1985) of the University of Guelph provided the Committee with a review of the subject. She concludes that:

> . . . normal levels of trace elements in the hair are still poorly defined and standard values by age, sex, geographic location are not yet available. Hence the use of hair trace element levels as a screening procedure to assess trace element status of individuals has limited use at the present time. Nevertheless hair analysis is useful for comparison of certain trace element levels of different populations, especially for the detection of environmental exposure to heavy metals.

The use of this type of testing should be reserved for highly selected cases in which a specific element is suspected after history-taking and physical examination. At the present time, hair analysis does not seem to be a reasonable test for any possible deficiency or toxicity.

f) Therapeutic Trials For Candida Albicans: As discussed in chapter 2, it has been suggested that

Candida albicans is a cause of many symptoms experienced by patients diagnosed as environmentally sensitive.

The diagnosis of Candida seems to rest mainly on the history plus a positive response to a therapeutic trial (Zwerlinger et al., 1984), rather than on specific diagnostic tests. A positive history is suggested if the patient has taken courses of antibiotics, birth control pills, coricosteroids or has been pregnant. Further support is given to the diagnosis if the symptoms are aggravated by tobacco smoke, perfumes, diesel fumes or chemical odors. Crook (1983) states that cultures for Candida are not indicated and of very little help. This is because most individuals have Candida in their skin or in their digestive tracts.

Other tests include sublingual or intradermal provocation-neutralization, or variations on these techniques. Blood tests for immune responses to Candida are available in a limited number of laboratories. These include measuring circulating Candida antigen or levels of anti-Candida antibodies. These tests are difficult to interpret because it is a ubiquitous fungus to which virtually everyone is exposed at some time. The laboratory changes, therefore, may simply reflect this exposure and not be an indication of disease.

Some of these tests are useful (Gentry et al, 1983) in persons with active infections causing obvious pathology, such as chronic mucocutaneous candidiasis or disseminated infection with an active focus and septicemia.

The Committee was unable to find any scientifically acceptable study, such as a double-blind trial, to support the validity of the above testing methods. We have already described problems with provocation-neutralization tests; the only available information about circulating Candida antigens and immunoglobulin levels related to "Candida Overload" comes from laboratories where tests are done. The Committee was unable to find any independent assessments of these procedures.

g) Vega II-Type Machines: The Committee was told by a clinical ecologist about the use of an electronic machine (Vega II) for diagnosing hypersensitivity disorders. To date, a limited amount of information has been found about such machines; they are apparently being used both for diagnosis and for determination of neutralizing doses of test substances.

Literature from Europe (Schimmel, 1984), states that the machine has been used for diagnosis of "disturbance fields," in the dental and maxillary regions where disturbance fields indicate subchronic inflammation, with or without local symptoms. Changes in the current may indicate problems with the teeth or indicate distant diseases such as eczema, migraine or nephropathies.

One report, (Krop et al., 1985) provides some information on the use of this machine for testing in hypersensitivity disorders. The patient is connected to the machine by two electrodes placed on chosen acupuncture points; one possible point is the medial side of the third toe. After standardization of the meter, the test substance is inserted into a well in the machine and a change in the galvanometer response is used to indicate possible sensitivity. A number of filters, such as cadmium or ferum metalicum or manganum, may be used for various purposes. Claimed advantages are efficiency (testing of 30 antigens in one and one-quarter hours), ability to test very sensitive or uncooperative patients, and objectivity of the response. One disadvantage relates to the acupuncture point, which may be affected, either by local pathologic changes or because it is exhausted. Patients may not be convinced of their sensitivity and thus will not follow the ecologic advice subsequent to the test. There may be an interfering effect from electro-magnetic fields in the area.

There is no apparent explanation for such changes in electrical fields in environmentally sensitive patients, particularly when they are not exposed directly to the possible offending substance. The absence of scientific studies demonstrating the effectiveness of this testing technique means that it is, at present, an unproven procedure.

Chapter Six - References

1. Barnes, J.M. "Assessing Hazards from Prolonged and Repeated Exposure to Low Doses of Toxic Substances". In _The British Medical Bulletin_, 1975; 31:3.

2. Bell, I.R. _Clinical Ecology: A New Medical Approach to Environmental Illness._ Commonweal Research Institute, 1982.

3. -------------; King, D.S. _Psychological and Physiological Research Relevant to Clinical Ecology: An Overview of the Current Literature_. Unpublished manuscript, 1981.

4. Breneman, J.C., et al. "Report of the Food Allergy Committee on the Sublingual Method of Provocative Testing for Food Allergy". In _Ann. Allergy_, 1973; 31:382-385.

5. ------------------------ "Final Report of the Food Allergy Committee of the American College of Allergists on the Clinical Evaluation of the Sublingual Provocative Testing Method for Diagnosis of Food Allergy". In _Ann. Allergy_, 1974; 33:164-166.

6. Bronsky, E.A. "Evaluation of the Provocative Food Skin Test Technique"(Abstract). In J. Allergy, 1971.

7. ---------------; Burkley, D.P.; Ellis, E.F. "Evaluation of the Provocative Skin Test Technique". In J. Allergy, 1971; 47:104.

8. Brostoff, J. "Production of IgE Complexes by Allergen Challenge in Atopic Patients and the Effect of Sodium Cromoglycate". In The Lancet, 1979.

9. Caplin, I. "Report of the Committee on Provocative Food Testing". In Ann. Allergy, 1973; 31:375-381.

10. Crawford, L.V.; Liegerman, P.; Harfi, H.A. "A Double-Blind Study of Subcutaneous Food Testing Sponsored by the Food Committee of the American Academy of Allergy". In J. Allergy Clin. Immunol., 1976; 57:236.

11. Crook, W.G. The Yeast Connection. Tennessee: Professional Books, 1983.

12. Draper, L.W. "Food Testing in Allergy: Intradermal Provocation vs Deliberate Feeding". In Archives of Otolaryng, 1972; 95:160-171.

13. Gentry, L.O.; Wilkinson, I.D.; Lea, A.S.; and Price, M.F. "Latex Agglutination Test for Detection of Candida Antigen in Patients with Disseminated Disease". Eur. J. Clin. Microbiol., Apr., 1983; 122-128.

14. Golbert, T.M. "A Review of Controversial Diagnostic and Therapeutic Techniques Employed in Allergy". In J. Allergy Clin. Imminol., 1975: 56(3):170-190.

15. Green, M. "Sublingual Provocative Testing for Food and FD & C Dyes". In Ann. Allergy, 1974; 33:274-281.

16. Grieco, M.H. "Controversial Practices in Allergy". In JAMA, 1982; 247(22):3106-3111.

17. Hayes, W.J. Toxicology of Pesticides. Baltimore, Maryland: Williams and Wilkins, 1875; 55-62.

18. Hiatt, H.H. "Protecting the Medical Commons". In N. Engl. J. Med., 1975; 293:235-241.

19. Hindmarsh, J.T. "Trace Elements in Clinical Practice". In Annals RCPSC, 1983; 16(7):629.

20. Hosen, H. "Provocative Testing for Food Allergy Diagnosis". In J. Asthma Research, 1976; 14:45-51.

21. Ishizaka, K.; and Ishizaka, T. "Identification of yE-Antibodies as a Carrier of Reaginic Activity". In Journal of Immunology, 1976; 99:1187-1198.

22. Jewett, D.L. and Greenberg, M.R. "Placebo Responses in Intradermal Provocation Testing with Food Extracts". In Journal of Allergy and Clinical Imunology, (Abstract no. 401); 75(1):part 2.

23. Kailin, E.W.; Collier, R. "Relieving Therapy for Antigen Exposure". In JAMA, 1971; 217:78.

24. King, D.S. "Can Allergic Exposure Provoke Psychological Symptoms? A Double-Blind Test". In Biol. Psychiat., 1981; 16: 3-17.

25. -------------- The Reliability and Validity of Provocative Food Testing: A Critical Review. Unpublished manuscript, 1985.

26.-----------------; Margen, S.; Ogar, D.; Durken, N. Double-Blind Food Challenges Affect Selected Children's Behavior and Heart Rate. Department of Psychiatry, University of California, San Francisco. Unpublished manuscript, 1985.

27. Krop, J.; Swierczek, J.; and Wood, A. Comparison of Ecological Testing with the Vega Test Method in Indentifying Sensitivities to Chemicals, Foods and

Inhalants. Presented at the Third Annual International Symposium on Man and His Environment in Health and Disease. Dallas, Texas, February 21-24, 1985.

28. Laseter, J.L. "Chlorinated Hydrocarbon Pesticides in Environmentally Sensitive Patients". In *Clinical Ecology*, 1983; 11(1):3-12.

29. Lehman, C.W. "A Double-Blind Study of Sublingual Provocative Food Testing: A Study of its Efficacy". In *Ann. Allergy*, 1980; 45: 144.

30. -------------- "The Leukocytic Food Allergy Test: A Study of its Reliability and Reproductibility: Effect of Diet and Sublingual Food Drops on This Test". In *Annals of Allergy*, 1980; 45:150-158.

31. Lieberman, P. "Controlled Study of the Cytotoxic Food Test". In *JAMA*, 1975; 231(7):728-730.

32. Mandell, M.; Conte, A. "The Role of Allergy in Arthritis, Rheumatism and Poly-Symptomatic Cerebral, Visceral and Somatic Disorders: A Double-Blind Study". In *J. Int. Acad. Prev. Med.*, 1982; July: 5-6.

33. Martin, M.E.; Guthrie, L.A.; and Bock, S.A. "Serum Complement Changes During Double-Blind Food Challenges in Children with a History of Food Sensitivity". In *Pediatrics*, 1984; 73(4):532-537.

34. May, C.D. "Food Sensitivity: Facts and Fancies". In Nutr. Rev., 1984; 42:72-78.

35. McGovern, J.J. "Correlation of Clinical Food Allergy Symptoms with Serial Pharmacological and Immunological Changes in the Patient's Plaasma". In Ann. of Allergy, 1980; 44:57-58. (Abstract)

36. Middleton, E.; Reed, C.E.; and Ellis, E.F. "Allergy Principles and Practices". C.V. Mosby Col., 1983; Vol 1 and 2.

37. Miller, J.B. "A Double-Blind Study of Food Extract Injection Therapy: A Preliminary Report". In Annals of Allergy, 1977; 38:185-191.

38. ------------ Food Allergy: Provocative Testing and Injection Therapy. Springfield, Illinois: Charles C. Thomas, 1972.

39. O'Shea, J.; Porter, A. "Double-Blind Study of Children with Hyperkinetic Syndrome Treated with Multi-Allergen Extract Sublingually". In J. Learning Disabil., 1981; 14:189-191.

40. Podell, R.N. "Intracutaneous and Sublingual Provocation and Neutralization". In Clinical Ecology, 1983; II(1).

41. Rapp, D.J. "Food Allergy Treatment for Hyperkinesis". In J. Learning Disabilities, 1979; 12:42-50.

42. Randolph, T.G. "Specific Adaptation". In Ann. of Allergy, 1978; 40:333-345.

43. Rea, W.J. "Environmentally Triggered Cardiac Disease". In Annals of Allergy, 1978; 40(4):243-251.

44. ------------- "Pesticides and Brain-Function Changes in a Controlled Environment". In Clinical Ecology, 1984; II(3):145-150.

45. Rinkel, H.J. "The Management of Clinical Allergy". In Archives of Otolaryngology, 1963; 77:56-75.

46. Schimmel, H.W. "Vega Communications: The Diagnosis of Disturbance Fields in the Dental and Maxillary Region, Using the Vega Test II". In Journal of the Scientific Department Section BER, Straub-Druck Gimbit, Schramberg, 1984.

47. Trevino, R.J. "Immunologic Mechanisms in the Production of Food Senitivities". In The Laryngoscope, 1981; 91:1913-1936.

48. Von Pirquet, C.P.; and Schick, B. Serum Sickness (translated by B. Shick). Baltimore: The Williams and Wilkins Co., 1951.

49. Williams, P.B. Clinical Immunologist. Personal communication, 1985.

50. Willoughby, J.W. "Provocative Food Test Technique". In Ann. Allergy, 1965; 23:543-554.

51. --------------- "Serial Dilution Titration Skin Tests in Inhalant Allergy". In Otolaryngologic Clinics of North America, 1974; 7(3):579-615.

52. Zwerling, M.H.; Owens, K.N.; and Ruth, N.H. "Think Yeast: The Expanding Spectrum of Candidiasis". In The Journal of the South Carolina Medical Assoc., 1984; 454-456.

Chapter Seven

Treatment Methods

The purpose of this chapter is to describe the primary treatment methods used in the care of environmentally hypersensitive patients by clinical ecologists in Ontario and to review the existing literature relating to those treatments. Rarely used treatments are discussed briefly.

General Patient Care

The extent to which clinical ecologists prescribe various treatment measures for environmentally hypersensitive patients depends on the degree of sensitivity, the range of environmental agents found to produce symptoms and the presence or absence of a diagnosis of Candida albicans. The primary treatment methods include:

1. Environmental change: this ranges from avoidance of suspected agents and minor lifestyle changes to the prescription of substantial environmental change in the home and/or work environment and lifestyle.

2. Dietary change: this may involve simple elimination of foods; rotary diversified diets; the use of vitamin and mineral supplements; the use of pure water and pure (organically grown) foods.

3. Therapeutic extracts: neutralizing extracts (containing dilute solutions of the offending environmental agents) are given by intradermal injection by the physician, are self-administered, or are taken in the form of sublingual drops.

4. Treatments for Candida: anti-fungal agents and low carbohydrate yeast-free diets, etc.

Whenever possible, clinical ecologists avoid the use of conventional drug medications (American Academy of Environmental Medicine, 1984-85; personal communication, patients and clinical ecologists, 1985).

A. Chronic Patient Care

1. Environmental change: Environmental change is a major treatment approach and often the first measure prescribed for environmentally hypersensitive patients. Essentially, this means avoidance of chemicals and other substances to which the patient has been found to be sensitive. For many patients, the prescribed environmental change may involve the simple avoidance

of one or two offending substances and minor lifestyle changes. However, those who are diagnosed as sensitive to a wide range of environmental agents may need to make changes that are much more dramatic.

In general, environmentally ill patients are instructed to avoid such commonly encountered items as scented shampoos, aftershave, deodorants, cigarette smoke, auto fumes, carpets, etc. (Bell, 1982; Levin and Zellerbach, 1983; ECU, 1984). The prescribed environmental changes may affect established family practices, either minimally or significantly. These may range from eliminating items that are perfumed, replacing household cleaning agents with natural products and avoiding certain social activities, through extensive alterations to the home (i.e., replacing gas heating and cooking appliances with those that use electricity; removing carpets and all plastic and synthetic materials; installing air and/or water filtering systems), to moving to a new location, changing jobs, and eliminating virtually all social activities.

Rea (1982) suggests that a person with chemical sensitivities has a crucial need for environmentally safe home conditions. Patients are sometimes advised to maintain one environmentally safe room in their home when they cannot afford to make extensive housing renovations.

It is clear that avoidance as a treatment technique can be effective. The Committee's only concern in this regard is that major, prescribed lifestyle changes may have a considerable social, financial, and emotional impact on the patient and his or her family; therefore, every effort must be made to avoid making these changes unless they are absolutely necessary.

2. Dietary Manipulation

a) Elimination Diets

Prescribed changes in diet form the basic treatment for patients diagnosed as having food sensitivities. If only a small number of foods are implicated, elimination of them is prescribed (Goldstein and Heiner, 1970; Randolph, 1974; Crook, 1983a). The Committee considers elimination diets an effective treatment technique.

b) Rotary Diversified Diet

If multiple foods are found to cause adverse reactions, a rotary diversified diet is often prescribed (Lee, 1969a; Bell, 1982; Rea, 1982; Crook, 1983a). In a rotation diet tolerated foods are eaten at regularly spaced intervals of four to seven days (Bell, 1982), with only a single food eaten at each meal. After three to six months on this regimen, the patient may be given a diet consisting of several foods; however, each individual food continues to be rotated. A given food is eaten no more than once every four to seven days and no two foods to which the patient has shown sensitivity are eaten on the same day (Bell, 1982; Borgati, 1985). The principle underlying the use of rotary diets is that, if tolerated foods are eaten in rotation, new sensitivities are less likely to occur. When tolerance develops to avoided foods, these may be worked back into the diet on the same rotational basis without producing adverse reactions (Rinkel, 1948; Bell, 1982).

The Committee is concerned about the nutritional dangers, the complexity and the difficulty of following strict rotation diets. Their potential nutritional inadequacy is demonstrated by the sample diet described by Bell (1982; Appendix 9), in which only four foods, one at each meal, are eaten per day. Because of the hazards of severe dietary restrictions and because of the importance of vitamin and mineral supplements, the role of the dietician is crucial in planning an individually tailored, nutritionally sound and easy-to-follow rotation diet (Todd, 1978; American Academy of Environmental Medicine, 1984-85; Joint Report, 1984).

The rotation diet may be effective for those who are sensitive to many foods. There is substantial literature describing rotation diets and reporting on their successful use with individual patients. However, we were unable to find any formal evaluation of the diet and so it remains unproven.

c) Vitamin and Mineral Supplements

In order to maintain adequate nutrition in patients on restricted diets, vitamin and mineral supplements are often prescribed (personal communication from clinical ecologists and patients, 1985). The American Academy of Environmental Medicine (1984-85) also supports the use of vitamin and mineral replacement therapy. In the opinion of the Committee, it is an appropriate treatment approach when prescribed for this purpose. Our concerns about the prescription of high levels of supplementation are discussed later in this chapter.

d) Pure Foods and Water

Identifying substances in water and food that may be causing adverse reactions is of particular concern to clinical ecologists; therefore, many patients are encouraged to purchase pure water and to eat organically grown foods. It may be difficult to ensure that such foods, in fact, are free of chemical contaminants. Adherence to an organic diet may lead to considerable expense and inconvenience.

3. Therapeutic Extracts: Some form of allergy extract therapy is often advocated as a treatment for the environmentally hypersensitive, for the control of chemical, food and inhalant-type sensitivities (Morris, 1969; Lee, 1969a; Lee, 1969b; Miller, 1972; Dickey, 1976; Miller, 1976; Miller 1977; Miller, 1981; Bell, 1982; Crook, 1983a). There are two basic methods of determining the extract dose level for environmentally sensitive patients.

a) The Rinkel Method

The first intradermal method was described by Rinkel (1963) and has since been modified by his students (Williams, 1971; Willoughby, 1974). A safe titration with which to begin treatment is determined by observing the whealing response induced with graded intradermal administrations of the allergen. Bell (1982) and Miller (1972) have described in detail the techniques used for the Rinkel method:

> The method uses simultaneous intradermal application of a set of progressively stronger 1:5 dilutions of the test material concentrate, usually in doses of

0.01 cc. Test doses initially form a 4 mm wheal. In a patient sensitive to the test allergen, the wheal will grow over a ten minute period. The dilution that first induces a wheal growth of over 2 mm is called the end point. Treatment will begin with some volume of this dilution. In serial dilution titration the skin whealing response alone -- not a change in symptoms -- is the criterion for selection of the appropriate treatment dilution (Bell, 1982).

b) The Provocation-Neutralization Method

The second method, provocative-neutralization, also involves intradermal injection of dilute allergen and has been described by Lee (1969a) and in greater detail by Miller (1972). Allergen extract is administered and, once the symptoms have been provoked, a weaker or stronger dilution is administered in an attempt to relieve them. The dilution that does so is termed the neutralizing dilution. This dose level is given at regular intervals with adjustment as required. Treatment involves long-term administration of the neutralizing dilution in a prophylactic manner prior to meals; the frequency is determined by individual patient variation.

There are three main differences between the Rinkel method and the provocative-neutralization method. First, larger volumes of allergen are injected: 0.05 cc. in the latter vs. 0.01 cc. in the former method. Second, in the provocation-neutralization method, the systemic symptoms that are provoked by the injection are monitored, in addition to the whealing response. Third, the provocation-neutralization treatment can be performed with intradermal or sublingual administration of allergen extract (Dickey, 1976; Levin and Zellerbach, 1983).

During the testing, the examiner must evaluate objective clinical signs, including subtle changes in attitude, behaviour and voice tone. In addition, such physical signs as urticaria and upper and lower respiratory distress, i.e., sneezing, nasal stuffiness and wheezing, must be evaluated.

The whealing response is considered superior by some because the neutralizing dose can be determined with higher efficiency and because, in asymptomatic patients, the whealing patterns can be used as a guide to finding the neutralizing dose (Miller, 1972). Guidelines for determining the neutralizing dose by symptom patterns were developed by Lee ("Lee's Axioms") and are explained well by Miller (1972). An increase or decrease in a patient's symptoms will guide the investigator in deciding which dilution of allergen to test for on subsequent trials.

A rotary diet, in conjunction with food neutralization therapy, is said to be beneficial in dealing with food sensitivities (Bell, 1982; Rea, 1982). Rea also states that neutralization therapy is a stopgap measure in treating chemical sensitivities and that avoidance is clearly the treatment of choice.

c) Assessment of Allergy Extract Therapy

Considerable controversy surrounds the use of both the Rinkel method and the provocation-neutralization method. There are few double-blind studies that deal with these methods; much of the published work in this area, both positive and negative, is in the form of abstracts (Bronsky et al., 1971; Crawford et al., 1976; Miller, 1976; Miller, 1981); case reports (Rapp, 1978; 1979); and letters to the editor (Kailin and Collier, 1971). In the absence of the full reports, it was not possible for the Committee to evaluate the above research.

There is a report attesting to the efficacy of extract therapy in the treatment of hyperkinesis in children (O'Shea and Porter, 1981). Although this study is double-blind, it relies on subjective assessment of the child's behaviour as an index of extract or placebo efficacy.

Intradermal and sublingual extracts may also be used as a treatment for acute adverse reactions (Bell, 1982; Levin and Zellerbach, 1983; Rea et al., 1984). Two double-blind evaluations of food extract injection therapy support this method of treatment (Rea et al., 1984; Miller, 1977). Rea et al. (1984) indicated that injection therapy eliminated acute reactions in sensitive individuals following oral food challenges. The authors noted that the neutralizing dose eliminated reactions in 60 per cent of the patients, while placebo reduced such reactions in only 15 per cent. It is worth noting that the authors included anaphylactic reactions to food but did not characterize and differentiate responses to these, as opposed to others where there was no reagenic response. There are several flaws in the study: the statistical analysis is inappropriate; controls were not used; the participation rate was only 38 per cent; and there is no discussion of the refusals.

Miller (1977) also reported a significantly better response to extract therapy than to placebo in eliminating acute symptoms due to food sensitivities. However, on a four point scale, the mean difference between extract and placebo was only 1.33. The patients were required to follow a strict diet and to self-administer the extract or placebo at home. In addition, the study relied heavily on patient evaluation of symptomatology and it offers little objective assessment. This was a preliminary study with only eight patients; the final report has not yet appeared.

Boris et al. (1985) recently described a double-blind study of neutralization therapy for animal antigen-induced asthma. Subjects who received the neutralization doses of antigen were protected against a subsequent bronchoprovocative challenge.

There is a controlled, multicentre, double-blind evaluation reported by Hirsch et al. (1981) refuting the efficacy of the provocation-neutralization method of treatment. In this study, the Rinkel injection method is evaluated as a treatment for atopic rhinitis. The authors concluded that the Rinkel method was no more effective than a histamine placebo in influencing the weekly mean symptoms, medication and physical exam scores or IgE antibody levels. The evaluation of the results was based mainly on objective, not subjective, parameters.

The Committee is aware of only one study that directly compares the effectiveness of the Rinkel method to the current standard method of immunotherapy. In their controlled double-blind study, Van Metre et al. (1979) evaluate the two techniques for efficacy in the treatment of ragweed pollen hayfever. In highly sensitive patients, the "optimal dose" determined by skin-test titration (Rinkel method) is, on the average, 10,000 times lower than the maximum dose used in the current standard immunotherapy method. The results of this study, involving 43 patients, indicated that, compared with the effects of either the Rinkel method or a placebo, the standard method of immunotherapy produced a significant decrease in ragweed hayfever symptom/medication scores, an increase in antiragweed IgG levels, and a decrease in seasonal rise in antiragweed IgE levels. Using these parameters, the effect of the Rinkel method was not significantly different from the effect of the placebo.

The Committee has concluded that there is, as yet, inadequate objective evidence demonstrating the effectiveness of either the Rinkel or the provocation-neutralization methods.

4. Treatments for Candida

The unproven causal relationship between Candida albicans and environmental hypersensitivity is discussed in chapter 2. The Committee was advised that most clinical ecologists in Ontario believe that Candida is a cause of many of the symptoms of environmental hypersensitivity and that they treat many of their patients for this problem.

The most commonly prescribed treatments include: eliminating such possibly aggravating drugs as antibiotics; using such oral anti-yeast drugs as nystatin and ketoconazole; and a low carbohydrate, yeast-free diet. Further measures recommended by Crook, 1983b, are avoidance of chemical pollutants and the use of antioxidants and therapeutic extracts.

Members of the Committee were puzzled by the oral use of nystatin in some circumstances, because the drug is not absorbed from the gastrointestinal tract and, nonetheless, is prescribed for Candida overgrowth in other parts of the body.

Levin and Zellerbach (1983) state that treatment with nystatin is to be considered safe but still experimental and that it should not be considered a panacea for all food and chemical sensitivities.

Some patients with Candida are treated with ketoconazole, a drug reported to cause side effects varying from mild (headache, dizziness, nausea, pruritis) to serious (hepatic necrosis) (AMA, 1983).

In addition, the Committee is aware of one Ontario doctor who occasionally uses Candidal injection therapy (Gilka, 1985).

The Committee was unable to find any studies demonstrating the effectiveness of any of the above-mentioned therapies (except the use of nystatin and ketoconazole); existing reports are primarily anecdotal in nature.

The Committee considers that nystatin and ketoxonazole are effective in the treatment of Candida; the difficulty lies with the unproven theory of causation and with the possibly serious side effects resulting from the use of ketoxonazole. In addition, although nystatin is a relatively inexpensive therapy that, under appropriate circumstances, is very safe, there is no clear evidence yet that it can be used safely over very long periods. "It may be poorly absorbed but over a sufficient length of time, low-level absorption might create adverse effects in a proportion of the treated population." (Zimmerman, 1985). It would appear that sound studies could be done quite easily to determine whether long-term use of nystatin is both effective and safe.

B. Acute Patient Care

1. Treatments for Acute Reactions

a) Vitamin C Injections

In treating anaphylactic-like shock symptoms, intravenous injections of vitamin C are given over a period of 20 to 30 minutes.

There is a body of experimental evidence to suggest that high doses of vitamin C may attenuate smooth muscle contractions and hence may be effective against anaphylactoid reactions. This literature extends over at least the last twenty years and was summarized recently by Schachter and Schlesinger (1982). In experimental animals, large doses of vitamin C may prevent anaphylaxis and other allergic reactions and may reduce airway obstruction caused by 5-hydroxytryptamine, bradykinin and histamine. With human subjects, conflicting results are reported, but megadoses of vitamin C may inhibit bronchospasms induced in asthmatics by histamine, exercise and exposure to particulates. Four mechanisms for these controversial results currently possess some experimental support. These include a direct effect of vitamin C on smooth muscle as well as indirect effects mediated through the influence of vitamin C on histamine break-down, cyclic AMP metabolism and prostaglandin production.

Two concerns about this treatment appear to have received little attention. First is the possible impact of massive vitamin C injections on acid-base balance, and second is the danger of generating the hydroxyl redical, a particularly reactive and dangerous molecule, through the interaction of ascorbic acid with oxygenated hemoglobin and other blood components (Benatti et al., 1983; Winterbourne, 1981). The pro-oxidant (i.e., free redical-producing) nature of injected vitamin C has been demonstrated in rats receiving dose levels comparable to those reported to the Committee as clinically effective (Dillard, 1982).

It has been suggested that enzymes and buffering systems are hindered in the allergic reaction (Randolph, 1974). The bicarbonate buffer is said to be one of the first impaired (Randolph, 1974), and alkali salts are given in order to restore acid-base balance (Clark and Randolph, 1950; Randolph and Clark, 1954; Randolph, 1962; Randolph, 1974; Bell, 1982; Hathaway and Warner, 1983; Levin and Zellerbach, 1983); they are also recommended (sodium and potassium bicarbonate in a ratio of 2:1) for the attenuation of adverse reactions (Dickey, 1976; Bell, 1982; Levin and Zellerbach, 1983). These are given by mouth or intravenously.

b) Naloxone

The Committee was also advised that some clinical ecologists treat acute reactions with naloxone. Naloxone has been reported to have a positive effect in the treatment of anaphylactic shock (Gullo, 1983), pruritis (Bernstein and Swift, 1979; Summerfield, 1980; Smitz and Legros, 1982), asthma and angiodema (Vilter, 1980).

c) Extract Therapy

The use of intradermal and sublingual extracts as a treatment for acute adverse reactions has already been discussed in this chapter.

d) Miscellaneous Treatments

It is suggested that induction of vomiting within the first hour after ingestion of a non-tolerated food is useful in minimizing reactivity in patients who experience an acute clinical reaction following exposure to an offending substance. After one hour, a laxative is usually given (Bell, 1982). Finally, having a patient breathe 100 per cent oxygen by mask for several minutes following an adverse reaction assists in the elimination of symptoms (Bell, 1982).

At this time, the procedures used for the treatment of acute reactions must be classified as scientifically unproven.

2. Environmental Control Units

Patients from Ontario who are severly sensitive to multiple environmental agents and whose health has deteriorated to the point where they are unable to be treated in a doctor's office (Crook, 1983a; Levin and Zellerbach, 1983) or at home, may be referred by clinical ecologists to environmental control units in the United States. These units are designed to provide an environment where the patient, removed from exposure to the airborne and contact substances that cause adverse reactions, is able to undergo testing and treatment (Dickey, 1976; Levin and Zellerbach, 1983). A high degree of commitment to the program is required (Appendix 10). It is estimated that approximately one per cent of environmentally hypersensitive patients will require the treatment program provided in these units (Levin and Zellerbach, 1983).

The environmental unit is often a floor of a hospital on which construction and design utilize natural products and furniture made from them (Dickey, 1976; Rea, 1982; Crook, 1983a; Levin and Zellerbach, 1983). Stainless steel, ceramics and unscented cleaning products are used. Both staff and patients are instructed to avoid cosmetics and to use unscented shampoo and deodorant.

On admission to an environmental unit, a patient is usually fasted on pure spring water for approximately five days. Organic, unseasoned foods are then introduced, one at a time (Dickey 1976; Crook, 1983a; Levin and Zellerbach, 1983). This method is also used for chemicals. Clinical reactions are recorded and lists are made of individual sensitivities. Randolph (1962) states that this is the most accurate method of discovering which environmental agents are causing illness. Therapeutic extracts are prepared for the patient at the neutralizing level determined during the testing process. The patient is taught how to manage his or her diet and is given suggestions on wearing apparel and on making environmental changes that will assist in coping with particular sensitivities (Levin and Zellerbach 1983).

While formal evaluation of environmental control units is not available, the Committee is of the opinion that such units appear to be helpful in providing both a temporary, safe environment for acutely ill patients and a good setting for testing and research purposes.

Members of the Committee visited the environmental control unit supervised by Dr. T. Randolph in an older building located in downtown Chicago and the unit supervised by Dr. W. Rea, located in a modern facility in a suburb of Dallas, Texas. There was no monitoring of air quality in either unit by any state or federal agency; however, the Dallas facility appeared to be superior in terms of measures taken to ensure a clean environment.

C. Rarely Used Treatment Methods

The Committee was advised by patients and physicians of a number of other treatments used for the environmentally hypersensitive. A given treatment may be preferred by one or two clinical ecologists and not be used by others. Only those currently in use in Ontario or those that might be used here in the near future are considered in this section.

1. Transfer Factor

Transfer factor is an active principle in viable leukocytes, leukocyte extracts and leukocyte dialysates obtained from immune human donors, and has the capacity to transfer cutaneous delayed-type hypersensitivity *in vivo* to non-immune recipients. Transfer factor has been used to treat a wide range of disorders: immunodeficiency diseases, neoplasms, chronic fungal, viral and bacterial infections (Levin et al., 1973; Massicot, 1982). Chronic mucocutaneous Candidiasis has been treated with transfer factor alone (Kirkpatrick, 1971; Truss, 1981) or in combination with anti-fungal agents such as amphotericin B (Buckley et al., 1968; Marmor and Barnett, 1968; Rocklin et al., 1970). Results from these studies are mixed in regard to the efficacy of transfer factor. Overall, the use of transfer factor appears to be safe, with few reported side effects.

Levin (1985), reports:

> We now have evidence that the symptoms of acquired food and petrochemical allergies are mediated by immune complexes. Immune complex formation and regulation are

> controlled by suppressor cells. Transfer factor enhances suppressor cells which in turn reduce the formation of antigen antibody complexes. Such complexes cause the symptomatic food and chemical reaction.

At this time, however, Levin does not provide supporting data.

There are no adequately controlled studies that demonstrate the effectiveness of transfer factor. The reports noted above are either anecdotal or inconclusive or both.

2. Tissue Extracts

Tissue extracts are administered by at least one clinical ecologist is Ontario, either alone or in combination with vitamin C (Gilka, 1985). Tissue tablets prescribed include drenatrophin (beef adrenal), thymatrophin (beef thymus) and revitolose-C-1000 (fresh extract of adrenal cortex, testicle and brain substance in glycerine solution). An enzyme mixture, viokase (amylase, lipase, protease), is used by at least one clinical ecologist in Ontario (Maclennan, 1985), as a treatment option.

No controlled studies on the use of tissue extracts as an effective treatment for environmental hypersensitivity could be found in the literature.

3. Vitamin and Mineral Therapy - Megadoses

The Committee was made aware that vitamin and mineral supplements may be given in large doses for therapeutic purposes. Unfortunately, there is evidence that some patients will disregard a physician's advice and will self-prescribe increasing quantities of vitamin/mineral preparations -- to the point of overdosing (Schaumburg et al., 1983; Berger and Schaumburg, 1984; Issenman et al., 1985). One of the possible dangers of vitamin/mineral overdose is sensory neuropathy, which can occur from even relatively modest excesses of vitamin B6 (Schaumberg et al., 1983, Berger and Schaumberg, 1984). Intake of megadoses of vitamin C can impair the function of some liver enzyme systems responsible for detoxifying drugs and other xenobiotics (Basu, 1983), and may predispose patients with cystinuria to kidney disease (Spielberg, 1985). A third example of potential danger concerns the trace element zinc: excessive doses of this nutrient can elicit a number of adverse effects including gastric irritation, anemia (through secondary copper deficiency) and, possibly, can depress some immune functions as well as cause predisposition to cardiovascular disease (Filteau and Woodward, 1984; Anon., 1985).

We were unable to obtain studies demonstrating the effectiveness of this approach.

4. Thyroid Therapy

Thyroiditis has also been proposed as a cause of environmental hypersensitivity (Saifer, 1985). The Committee is aware of only two physicians in the United States, Dr. Eduardo Gaitan of Birmingham, Alabama and Dr. Phyllis Saifer of San Francisco, California, who use thyroid therapy as an approach to the treatment of this disorder. Patients present with memory loss, morning fatigue, gastrointestinal and muscular symptoms. Evidence of thyroid antibody is considered to be evidence of autoimmune thyroiditis, in spite of normal thyroid function. Treatment consists of administration of either synthetic T4 or natural dessicated thyroid extract. Patients who do not respond after six months of thyroid treatment may undergo a thyroidectomy, in order to remove the deleterious tissue effects of abnormal thyroxine (Saifer, 1985). There are no controlled research studies available to verify this approach.

5. Kelly Method

This form of therapy was brought to the attention of the Committee by a patient in another province (James, 1985). The Kelly method includes the use of organic foods, vitamins, minerals, enzymes and protomorphogens (e.g., raw adrenal tissue or raw liver tissue in tablet form) and of a dental splint. The combined method is not used in Ontario (Maclennan, 1985); however, some components are used in the treatment of environmental hypersensitivity, as discussed earlier in this chapter. This procedure, as well, remains scientifically unproven.

6. Mercury Amalgam Fillings

Another factor alleged by some to contribute to the total load of those with environmental hypersensitivity is the mercury in the amalgam used in the treatment of dental caries. Symptoms are said to include irritability, depression, anxiety, stomatitis, spells of abdominal pain, diarrhea, cardiac irregularities, tinnitus, tremor, emphysema, asthma, rhinitis, weakness, fluid retention and anorexia (Ziff, 1984). Absorption from fillings is not expected, therefore it is difficult to explain a relationship of fillings to this multiplicity of symptoms, even if one does exist. Cronin (1980), states that amalgam fillings, once inserted, do not cause reactivity but that contamination of the facial skin and buccal mucosa during filling of the teeth can accuse eczema of the face and neck which may become widespread (Frykholm, 1957; Vickers, 1967). However, patch tests applied to the buccal mucosa are usually reported negative (Cronin, 1980).

It has been reported that systemic absorption of mercury from amalgam can be a rare cause of dermatitis in sensitized patients. In a case study, Sidi and Casalis (1951) report on a woman who had been sensitized as a child by topically applied mercury. She had chronic eczema of the head, neck and forearms, but no stomatitis. Patch testing with mercury was positive. Her amalgam fillings were removed, and the eczema subsequently healed.

Patients told the Committee that some physicians advocate the removal of dental fillings for the control of the symptoms of environmental hypersensitivity. This intervention, however, is used only when other treatment methods have failed (Maclennan, 1985). At the present time, it is a treatment method that remains unproven.

References - Chapter Seven

1. American Academy of Environmental Medicine. Position Paper. 1984-85.

2. American Medical Association, Division of Drugs. AMA Drug Evaluations 5th Edition. Philadeploha: W.B. Saunders Company, 1983.

3. Anon. "Megadose Zinc Intakes Impair Immune Responses". In Nutr. Rev., 1985; 43:141-143.

4. Basu, T.K. "Effects of Protein Malnutrition and Ascorbic Acid Levels on Drug Metabolism". In Can. J. Physio. Pharm., 1983; 61:295-301.

5. Bell, I.R. Clinical Ecology: A New Medical Approach to Environmental Illness. Bolinas, California: Common Knowledge Press, 1982.

6. Benatti, U.; Morelli, A.; Guida, L.; and DeFlora, A. "The Production of Activated Oxygen Species by an Interaction of Methemoglobin with Ascorbate". In Biochem. Biophys. Res, Comm., 1983; 111:980-987.

7. Berger, A. and Schaumberg, H. "More on Neuropathy from Pyridoxine Abuse". NEJM, 1984; 311:986-987.

8. Bernstein, J.E. and Swift, R. "Relief of Intractable Pruritis with Naloxone". In Arch. Dermatol., 1979; 115:1366-1367.

9. Borgatti, R.S. "A Sensible Approach to Food Allergy". In Patient Care, Feb. 1985; 48-79.

10. Boris, M.; Schiff, M.; Weindorf, S.; and Inselman, L. "Antigen Induced Asthma Attenuated by Neutralization Therapy". In Clinical Ecology, 1985; 3: 59-62.

11. Bronsky, E.A.; Buckley, D.P.; and Ellis, E.P. "Evaluation of the Provocative Skin Test Technique". In J. Allergy, 1971; 47: 104 (Abstract).

12. Buckley, R.H.; Lucas, Z.J.; Hattler, B.G.; Zmijewki, C.M.; and Amos, D.B. "Defective Cellular Immunity Associated with Chronic Mucocutaneous Moniliasis and Recurrent Staphylococcal Botryomycosis: Immunological Reconstitution by Allogenic Bone Marrow". In Clin. Exp. Immunol., 1968; 3: 153-169.

13. Clark, H.G. and Randolph, T.G. "The Acid Anorexia-Endocrine Theory of Allergy". In J. Lab. Clin. Med., 1950; 36: 811-812.

14. Crawford, L.V.; Lieberman, P.; Harfi, H.I.; Halte, R.; Nelson, H.; Selner, J.; Witting, H.; Postman, M.; and Zietz, H. "A Double-Blind Study of Subcutaneous Food Testing, Sponsored by the Food Committee of the American Academy of Allergy". In J. Allergy Clin. Immunol., 1976; 57: 236 (Abstract).

15. Cronin, E. Chronic Dermatitis. New York: Churchill, Livingstone, 1980; 682-683.

16. Crook, W.G. The Yeast Connection. Jackson, Tennessee: Professional Books, 1983.

17. ------------- "The Coming Revolution in Medicine". In J. Tenn. Med. Assoc., 1983; 76 (3).

18. Dickey, L.D. Clinical Ecology. Springfield, Illinois: Charles C. Thomas, 1976.

19. Dillard, C.G.; Kunert, K.J. and Tappel, A.L. "Effects of Vitamin E, Ascorbic Acid and Mannitol on Alloxan-Induced Lipid Peroxication in Rats". In Arch. Biochem. Biophys., 1982; 216: 204-212.

20. ECU Manual: A Guide for the Environmentally Sensitive Individual. 1st ed., 1984. Prepared by the staff and published by the Environmental Health Center, Dallas, Texas

21. Filteau, S.M. and Woodward, B. "Relationship Between Serum Zinc Level and Immunocompetence in Protein-Deficient and Well-Nourished Weanling Mice". In Nutr. Res., 1984; 4: 853-866.

22. Frykholm, K.O. "Mercury from Dental Amalgam: Its Toxic and Allergic Effects". In Acta Odontologica Scand., 1957; 15, Supplement, 22; 65.

23. Gilka, L. Physician (environmental medicine), Ottawa, Ontario. Personal communication, June, 1985.

24. Goldstein, G.B. and Heiner, D.C. "Clinical and Immunological Perspectives in Food Sensitivity". In J. Allergy, 1970; 46: 270-291.

25. Gullo, A. and Romano, E. "Nalaxone and Anaphylactic Shock". In The Lancet, April 9, 1983; 819.

26. Hathaway, M.J. and Warner, J.D. "Compliance Problems in the Dietary Management of Eczema". In Arch. Dis. Child., 1983; 58: 463-464.

27. Hirsch, S.R.; Kalbfleisch, J.H.; Golbert, T.M.; Josephson, B.M.; McConnell, L.H.; Scanlon, R.; Knicker, W.T.; Fink, J.N.; Murphee, J.J.; Cohen, S.H. "Rinkel Injection Therapy: A Multi-Center Controlled Study". In J. Clin. Immunol., 1981; 68: 133-135.

28. Issenman, R.M.; Slack, R.; MacDonald, L.; and Taylor, W. "Children's Multiple Vitamin: Overuse Leads to Overdose". In CMAJ, 1985; 132: 781-784.

29. James, S. Letter to Judge Thomson, Chairman of the Committee, dated March 21, 1985.

30. "Joint Report of the Royal College of Physicians and the British Nutrition Foundation: Food Intolerance and Food Aversion". In J. Royal Coll. of Physicians of London, 1984; 18 (2): 83-123.

31. Kailin, E.W. and Collier, R. "'Relieving' Therapy for Antigen Exposure". In JAMA, 1971; 217:78. (Letter).

32. Kirkpatrick, C.H. "Chronic Mucocutaneous Candidiasis: Model Building in Cellular Immunity". In Ann. Intern. Med., 1971; 74: 955-978.

33. Lee, C.H.; Williams, R.I.; Binkley, E.L. "Provocative Inhalant Testing and Treatment". In Arch. Otolaryng., 1969; 90: 81-85.

34. -- "Provocative Testing and Treatment for Foods". In Arch. Otolaryng., 1969; 90: 113-120.

35. Levin, A.S. Transfer Factor: Information on Treatment. Letter, 1985.

36. ------------; Spitler, L.E.; and Fudenberg, H.H. "Transfer Factor Therapy in Immune Deficiency States". In Ann. Rev. Med., 1973; 24: 175-209.

37. --------------; Zellerbach, M. The Type 1/Type 2 Allergy Relief Program. Los Angeles, California: Jeremy P. Tarcher, 1983.

38. MacLennan, J.G. Physician (environmental medicine), Dundas, Ontario. Personal communication, June, 1985.

39. Marmor, M.F. and Barnett, E.V. "Cutaneous Anergy Without Systemic Disease". In An. J. Dis., 1968; 44: 979-989.

40. Massicot, J.G. and Goldstein, R.A. "Transfer Factor". In Ann. Allergy, 1982; 49: 326-329.

41. Miller, J.B. "A Double-Blind Study of Food Extract Injection Therapy: A Preliminary Report". In Ann. Allergy, 1977; 38: 185-191.

42. -------------. Food Allergy: Provocative Testing and Injection Therapy. Springfield, Illinois: Charles C. Thomas, 1972.

43. --------------. "Food Extract Injection Therapy: Fact or Fiction?". In Ann. Allergy, 1981 (50 Abstract)

44. --------------. "Intradermal Provocative Food Testing and Subcutaneous Food Injection Therapy". In Ann. Allergy, 1976; 36(4): 295.

45. Morris, D.L. "Use of Sublingual Antigen in Diagnosis and Treatment of Food Allergy". In Annals of Allergy, 1969; 27:289-294.

46. O'Shea, J.A. and Porter, S.F. "Double-Blind Study of Children with Hyperkinetic Syndrome Treated with Multi-Allergen Extract Sublingually". In J. Learning Disab.,1981; 14(4):189-191,237.

47. Randolph, T.G. and Clark, H.G. "Sodium Bicarbonate in the Treatment of Allergic Conditions". In J. Lab. Clin, Med., 1954; 44:915.

48. Randolph, T.G. "Dynamics, Diagnosis and Treatment of Food Allergy". In Otolaryngol Clinics for N. America, 1974; 7:617-635.

49. -------------- Treatment in Human Ecology and Susceptibility to the Chemical Environment. T.B. Randolph, ed. Springfield, Illinois: C.C. Thomas, 1962.

50. Rapp, D.J. "Double-Blind Confirmation and Treatment of Milk Sensitivity". In Med. J. Aust., 1978; 1:571-572.

51. --------------. "Food Allergy Treatment for Hyperkinesis". In J. Learning Disabilities, 1979; 12:42-50.

52. Rea, W.J.; Podell, R.N.; Williams, M.L.T.; Fenyves, E.; Sprague, D.E.; and Johnson, A.R. "Elimination of Oral Food Challenge Reaction by Injection of Food Extracts". In Arch, Otolaryngol., 1984; 110:248-252.

53. Rea, W.J. "Environmentally Triggered Disorders". In Sandorama, 1982; 27-31.

54. Rinkel, H.J. "The Managemant of Clinical Allergy, Part II, Etiologic Factors and Skin Titration". In Archives of Otoloarynology, 1963; 77:56-89.

55. --------------. "The Function and Clinical Application of the Rotary Diversified Diet". In J. Paed., 1948; 32:266-274.

56. Rocklin, R.E.; Chilgren, R.A.; Hong, R.; David, J.R. "Transfer of Cellular Hypersensitivity in Chronic Mucocutaneous Candidiasis Monitored in Vivo and Vitro". In Cellular Immunology, 1970; 1:290-299.

57. Saifer, P. Physician (environmental medicine), San Francisco, California. Personal Communication. May 1985.

58. Schachter, E.N. and Schlesinger, A. "The Attenuation of Exercise-Induced Bronchospasm by Ascorbic Acid". In Ann. Allergy, 1982; 49:146-151.

59. Schaumburg, H.; Kaplan, J.; Windebank, A.; Vick, N.; Rasmus, S.; Pleasure, D.; and Brown, M. "Sensory Neuropathy from Pyridoxine Abuse: A New Megavitamin Syndrome". In NEJM, 1983; 309:445-448.

60. Sidi, E. and Casalis, F. "Les Intolerances de La Muqueuse Buccale". In La Presse Medicale, 1951; 59:730-732.

61. Smitz, S. and Legros, J.J. "Naloxone, Itch, Asthma Urticaria, and Angioedema". In Ann. Int. Med., 1982; 97:788-789.

62. Spielberg, S. Asociate Professor of Pediatrics and Pharmacogenetics, Hospital for Sick Children, Toronto, Ontario. Personal communication, June, 1985.

63. Summerfield, J.A. "Naloxone Modulates the Preception of Itch in Man". In Br. J. Clin. Pharmac., 1980; 10:180-183.

64. Todd, S. and Mackarness, R. "Allergy to Food and Chemicals: 2. Investigation and Treatment". In Nursing Times, March, 1978; 23:506-510.

65. Truss, C.O. "The Role of Candida Albicans in Human Illness". In J. Orthomolecular Psychiatry, 1981; 10:228-238.

66. Van Metre, T.E.; Adkinson, M.F.; Amodio, F.J.; Lichtenstein, L.M.; Mardiney, M.R.; Norman, P.S.; Rosenberg, G.L.; Sobotka, A.K.; and Valentine, M.D. "A Comparative Study of the Effectiveness of the Rinkel Method and the Current Standard Method of Immunotherapy for Ragweed Pollen Hay Fever". In J. Allergy Clin. Immunol., 1979; 66(6):500-513.

67. Vickers, C.F.H. "Mercury Sensitivity". In Contact Dermatitis Newsletter, 1967; 2:20

68. Vilter, R.W. "Nutritional Aspects of Ascorbic Acid: Uses and Abuses". In Western J. Med., 1980; 133:485-492.

69. Williams, R.I. "Skin Titration: Testing & Treatment". In Otolaryngol. Clinic North Am., 1971; 507-521.

70. Willoughby, J.W. "Serial Dilution Titration Skin Tests in Inhalant Allergy: A Clinical Quantitative Assessment of Biologic Skin Reactivity to Allergenic Extracts". In Otolar. Clin. North Am.,1974; 7:579-615.

71. Winterbourne, C.C. "Hydroxyl Radical Production in Body Fluids: Roles of Metal Ions, Ascorbate and Superoxide". In Biochem. J., 1981; 198:125-131.

72. Ziff, S. Silver Dental Fillings: The Toxic Time Bomb. New York: Aurora Press, 1984.

73. Zimmerman, B. Director, Division of Allergy, Hospital for Sick Children. Personal communication, July, 1985.

Chapter Eight

A - CONCLUSIONS

We come now to the purpose for which this Committee was formed: to set out our conclusions and to formulate recommendations that may be useful to the Ministry of Health in deciding on future initiatives related to environmental hypersensitivity.

Certain of our conclusions are little more than restatements of issues covered earlier in this report; on other matters, this is the first opportunity the Committee has had to express its position.

I - Prevention and the Environment

We wish to begin by stating that our study of one disorder, environmental hypersensitivity, raised our collective concern about the role of environmental factors as a cause of human illness. We believe that chapter 3 illustrates the basis for that concern. It seems clear that we are inexorably increasing the toxicity of our environment. Some of those chemicals may not be hazardous. However, it is clear that some are and that, for many, we have no way as yet of knowing whether they are or are not harmful; nor do we have adequate information on the effects of low-dose exposure over long periods or the possible synergistic effects of long-term exposure to many chemicals. These concerns were expressed repeatedly by people we met with or who wrote to the Committee.

In the course of this Committee's work, we were impressed by the strong commitment to a clean environment demonstrated by many of those we met or heard from; we were asked repeatedly to examine the issue of environmental hypersensitivity in a broader environmental context and many of the recommendations we received reflected this approach. A number of individuals expressed the opinion that the seriousness of such issues is not adequately appreciated by government. If that view is accurate, we would join them in their concern.

We were impressed with the efforts many people are making to minimize environmental risk. For example, we learned that many school boards have begun to identify agents within the school environment that could be affecting student performance and behaviour. A number of quite sensible and practical measures are being taken to minimize the likelihood of such effects, including: postponing painting and spraying activities until school vacations; establishing a special committee to identify potentially hazardous building products in order to gradually eliminate them from existing buildings and prevent their use in future structures; developing experimental "low-pollution" classrooms in one or two schools to find out whether they help individual students who seem to have special environmental needs. While such experimental classrooms are of value, we believe that, in the long run, the answer is to ensure that the school environment as a whole is appropriate so that some students are not isolated from the rest of the student body.

We think that it is important that any attack on the problem be a balanced one; we were given a "clinical ecology handout" prepared by consultants for use by one school board -- and being made available to other boards across the province -- which seemed to us to lack that kind of approach. On the whole however, we were impressed with these examples of concern about environmental factors that might hamper the abilities and wellbeing of individual students.

II - Existence and Prevalence of Environmental Hypersensitivity

Clearly, it was a central task of the Committee to report on whether, in its opinion, what is known as environmental hypersensitivity exists. In formulating a position, we acknowledge first the problems we faced in defining the term. Throughout the period of the Committee's existence, it was easier to say what environmental hypersensitivity is **not** rather than to say, with certainty, what it is. Generally, the people we are dealing with do **not** manifest symptoms that are immunologically measurable at present. We have not included those who have been exposed to unacceptable levels of known toxic elements in the environment. Furthermore, the enormous range of symptoms ascribed to environmental hypersensitivity, combined with the absence of agreed-on, scientifically established methods of verifying its existence, make it difficult and even controversial to describe the environmentally hypersensitive patient.

Even after considering the issue at length, reviewing definitions contained in the literature, and consulting a number of persons knowledgeable in the field, we found no unanimously endorsed definition; we are of the opinion that a great deal of work remains to be done before one that is precise and acceptable emerges. Nonetheless, we have arrived at a definition for the purposes of this report. As set out in chapter 2, it is:

> Environmental hypersensitivity is a chronic (i.e., continuing for more than three months) multisystem disorder, usually involving symptoms of the central nervous system and at least one other system. Affected persons are frequently intolerant to some foods and they react adversely to some chemicals and to environmental agents, singly or in combination, at levels generally tolerated by the majority. Affected persons have varying degrees of morbidity, from mild discomfort to total disability. Upon physical examination, the patient is normally free from any abnormal, objective findings. Although abnormalities of complement and lymphocytes have been recorded, no single laboratory test, including serum IgE, is consistently altered. Improvement is associated with avoidance of suspected agents and symptoms recur with re-exposure.

In chapter 3, we set out examples of environmentally induced adverse reactions. We also confirmed that there are many environmental hypersensitivities already well established in the scientific literature. The best known is probably the effect of cigarette smoke on some people; another example is the evidence that certain foods produce conditions such as non-allergic urticaria (hives) in susceptible individuals.

In our opinion, there is good reason to believe that environmental hypersensitivity goes beyond what has already been verified, and to suggest that there are a number of persons who are being adversely affected in various ways by exposure to one or more agents in our environment. We relied on the following factors in coming to this decision.

a) The presence, already mentioned, of many new chemicals being added to our environment with relatively little understanding of their potential effects, coupled with the knowledge that certain sensitivities have been verified, logically suggests that the problem may be even greater than is now understood. If, as has been noted, "scientific knowledge never will be complete . . . (and) our theories or models do not exhaust reality" (Jackson, 1985); if we also accept that the practise of medicine is still an art as much as a science; and if we acknowledge that, as we make progress, "the complexity of the human system, and the scale of our remaining ignorance, becomes more apparent"(Jackson, 1985), then it is reasonable to accept the view that environmental hypersensitivity is a growing phenomenon.

b) There is the striking amount of anecdotal material, already referred to, that we were given; even if one acknowledges the limits of that type of data, the sheer volume and the consistency of the histories described were impressive. In the words of Dr. David Roy, a bioethicist who met with the Committee, after reviewing a number of letters:

> In my opinion it would be intellectually unjustified to ignore these reports. It would seem to me that these reports constitute their own initial raw data to support the existence of some kind of complex syndrome that you can call environmental hypersensitivity or ecological illness or whatever other descriptive term we need.

c) As noted in chapter 2, some theories of causation, though not yet scientifically verified, merit further study. They include the following:

i) the well-recognized fact that sensitivity to external stimuli is individual and variable; following from that is the developing perception that some persons are genetically predisposed to greater sensitivity to environmental substances. Acceptance of this supports the proposition that threshold levels may vary from person to person and, within any individual, from one time to another;

ii) the view that the immune system can become compromised after a viral infection;

iii) the theory that immune complexes involving different immunoglobulin classes cause pathology;

iv) the suggested feedback loop between the central nervous system, particularly the brain, and the immune system.

As noted in chapter 2, these theories are not yet verified as explanations of environmental hypersensitivity. However, there are findings in various fields of research that suggest that these theories are worthy of further study. To this extent, they support the argument that the diagnosis of environmental hypersensitivity may be a valid one.

d) The appeal of the approach taken by some of the persons working and studying in this field lies in the fact that they reflect an approach to the practice of medicine that is "marked by acceptance of complexity, by attempts to study and relate multiple variables and by striving for theories straddling interdisciplinary boundaries." (Lipowski, 1977) Nutritional, social and environmental factors are seen as relevant to an understanding of the illness; there is some recognition that the meaning of the illness is important to the patient. There is also evidence of an holistic attitude in the approach to therapy, "working person to person in such a way that the client is an active agent and learner." (Jackson, 1985)

It would be incorrect to characterize all those working in the field as operating in this way; we encountered people who were rigidly locked into one or more of the as-yet-unproven causation theories. We also found people who focused solely on their own clinical experience and who saw little need for research to establish the efficacy of what they do. However, while recognizing that the approach taken does not, in itself, validate the diagnosis, the Committee acknowledges the extent to which work in this field supports a multi-disciplinary perspective and recognizes the doctrine of multi-causality of physical illness.

While we believe that there is evidence to support the view that a significant number of persons show symptoms of environmental hypersensitivity (as defined above), we are unable to make any definitive statement about the prevalence of the disorder. In our view, there are a number of reasons for questioning estimates that the affected population is a large one and that it is growing rapidly. These are as follows:

1. Much of the identification of the disorder is based on diagnostic tests of unproven reliability; that fact alone makes it impossible for us to make definitive statements about the prevalence of the condition. As we have already noted, many patients have undergone large numbers of conventional medical tests, all with negative results; at the environmental unit in Dallas, for example, patients are subjected to a wide range of tests designed to identify or eliminate other possible explanations for their presenting symptoms.

2. As set out in chapter 2, a number of other explanations for the symptoms have been put forward. They include:

   i. The Premenstrual Syndrome
   ii. Hyperventilation
   iii. Hypoglycemia

iv. The Autoimmunity, Polyendocrinopathy, Immune dysregulation, Candidiasis and Hypersensitivity Syndrome (the APICH Syndrome)

v. Electromagnetism

vi. Iatrogenic Illness

vii. Psychosomatic Illness

Reference to the enormous range of symptoms accepted as consistent with a diagnosis of environmental hypersensitivity and the great variability of the patients themselves helped persuade the Committee that these alternative explanations are relevant to some of the patient sample under review. The more difficult -- and, at this point, unanswerable -- question, is the extent to which this patient population would be reduced by subtracting those whose illnesses are other than environmental hypersensitivity.

It was frequently suggested to us that these people, in fact, suffer from psychiatric disorders -- the two most often named are somatization disorder and clinical depression. Clearly, this is an area of controversy; we have already discussed the strongly negative reaction of patients to what they see as an attempt by physicians to seek refuge in a psychiatric label whenever it is impossible to identify a biological cause for their illness.

Somatization disorder is defined as occurring when a patient has "a history of physical symptoms of several years' duration beginning before the age of 30 . . . complaints of at least 14 symptoms for women and 12 for men from the 37 symptoms listed in the manual; to count as a symptom (it must be reported by the individual as having) caused him or her to take medicine other than aspirin, alter his or her life pattern or to see a physician. The symptoms are not adequately explained by physical disorder or physical injury and are not side effects of medication, drugs or alcohol. The clinician need not be convinced that the symptom was actually present but the report of the symptom by the individual is sufficient." (DSM III - Diagnostic Criteria)

Understandably, the patient may feel that the continuing failure of traditional medicine to identify the cause of illness is, of itself, no justification for a decision that he or she is psychiatrically ill -- that the doctors' inability to recognize the real cause of the illness has been taken as proof of mental disturbance.

We are convinced that emotional and psychological factors do play a role in some patients; many of them do not deny emotional disturbance. However, they argue that such disturbance is the inevitable byproduct of a lengthy attempt to seek treatment, characterized by inaccurate diagnoses, possibly by several unsuccessful or even harmful attempts at treatment, by increasing disability and by social isolation. In such cases, the key question is whether the "real" cause is to be found in the psyche, or in the environment.

Those who see the illness as simply a psychological manifestation can be said to be as inflexible as those who see it as strictly a biological disorder. One author notes that:

> . . . the concept of psychogenesis of organic disease is as reductionist as the germ theory of it, against which pioneers in psychosomatic medicine inveighed. . . To distinguish a class of diseases as "psychosomatic disorders" and to propound generalizations about "psychosomatic patients" is misleading and redundant. Concepts of single causes and of unilinear causal sequences -- for example, from psyche to soma and vice versa -- are simplistic and obsolete. (Lipowski, 1977)

3. The diagnostic difficulties for both doctor and patient may be exacerbated by the widespread perception

that medical science is better able to explain the physiological processes of the body and to identify the causes of disease than, in fact, is the case. When the cause of a patient's illness is not known, this, ideally, should be recognized by both the physician and the patient. The physician should not feel that it is necessary to ascribe a cause to the illness rather that admitting that the cause is not known. Such a confession of ignorance is not always accepted by a public that has been encouraged to believe that all illnesses have a known cause. There is still perhaps a general unwillingness to appreciate, as all conscientious medical practitioners do, that medicine is both a science and an art.

4. As noted earlier, some patients have been subjected to a very large number of conventional medical tests and procedures with negative results. The existence of a number of ill persons desperately in search of the cause for their illness, coupled with what may be a predisposition on the part of some to diagnose environmental hypersensitivity, increases concern about the possible iatrogenic nature of the disease.

5. We remain sharply aware of the anecdotal or clinical nature of much of the evidence presented to us and, as we noted earlier, the literature is filled with

causation theories that are both varying and controversial. Moreover, while we have already acknowledged that some are worthy of further study, it is also true that they are essentially unproven.

Furthermore, the history of medicine abounds with examples of innovations that achieved prominence and acceptance on the basis of anecdotal and clinical evidence alone, only to be discarded when sound, scientific research demonstrated that they were ineffective. A number of individuals who wrote to or met with the Committee expressed concern that we might make the same mistake. In their view, judgment should be withheld until research provides reliable answers.

Consideration of all these factors tempered but did not alter the Committee's opinion that the diagnosis of environmental hypersensitivity has validity. However, we are convinced that it is impossible to estimate, with any degree of precision, the total number of persons in Ontario who have such sensitivities.

III - Medical Approaches to Environmental Hypersensitivity

We acknowledge that, throughout the medical field, there is growing awareness of the importance of environmental factors in understanding disease; the development of the specialties of industrial medicine and toxicology are obvious illustrations that this is so. When taking medical histories, many family practitioners, allergists and others now routinely ask questions designed to identify possible problems in the patient's immediate environment, i.e., at home, in the workplace, as the result of dietary habits.

Concern for the social and environmental context of disease is part of any comprehensive analysis of a patient's condition. It has been said that "when medicine is practiced . . . with . . . basic nutritional and ecological concepts incorporated into clear medical theory, many conditions which we have viewed as specific diseases of unknown etiology can be more effectively prevented and managed." (Beasley, 1981).

There is evidence at the same time that a number of family practitioners and medical specialists do not sufficiently recognize that these external factors can play a role in causing illness. Members of the Committee and some of the experts we met make this point. In addition, as we have already mentioned, a number of patients complained that their doctors were unwilling to accept even the possibility that foods or chemicals might be implicated in their symptoms.

Several of the experts we consulted feel that one reason for this is that little time is devoted in medical training to environmental issues.

There is a growing understanding of the importance of the nutritional aspects of illness in clinical care; we were pleased to learn that "some medical schools have moved to incorporate nutrition education into the curriculum and to enhance nutritional care through cross appointments with the clinical departments of hospitals." (Draper, 1985). Nonetheless, we remain concerned that knowledge about nutrition continues to be less than it should be amongst members of the medical profession as a whole.

We found that there has been increased interest in recent years in the quality of indoor air, focused especially on urea formaldehyde foam insulation and the "sick building syndrome". Rooms with poor ventilation hold the potential for problems because they can enclose elements such as cigarette smoke, carbon dioxide, carbon monoxide, formaldehyde, radon and moulds; however, it is often possible to measure indoor air quality, to identify existing problems, and to work out methods of dealing with them. While a few doctors apparently seek such an analysis, we sense that most do not consider it a possible or warranted test.

In chapter 4, we described the practice of clinical ecology as we observed it and we wish here only to set out some of our findings on the subject.

a) Committee members are of the opinion that the approach of clinical ecologists to their patients appears to have a positive impact quite independent of the medicine they practise. The doctor's attitude to the patient, combined with a firm diagnosis and recommended course of action, presented as likely to produce full recovery, has a positive effect on the healing process. That effect is probably heightened even further if, prior to the diagnosis of environmental hypersensitivity, a psychiatrist has characterized the illness as a psychiatric disorder. The reasons were well stated in one letter received by the Committee:

> Some illnesses respond well to biological treatment; pneumonia caused by the pneumococcus responds to penicillin, even if psychological and social factors are involved in determining that this particular individual has come down with the disease. Other illnesses, such as in the area of chronic pain, have no simple biological explanation. They are

symbolic illnesses -- illnesses in which the meaning to the individual of being ill is a paramount factor.

The treatments for symbolic illnesses are often considered mere placebos by biological medicine. Placebos are interventions that cannot be demonstrated experimentally to have a better effect than "no" treatment at all on a group of individuals with a disease. The specific placebo as an intervention on the symbolic level directed at the meaning of an illness for a specific individual, however, often is an extremely effective intervention. Placebos can be used with biological interventions, but the placebo itself releases some natural power of the body to heal itself.

Traditional allergists and clinical ecologists do not see illness the same way. The allergist explains illnesses solely by biological models. The clinical ecologist does not always fully distinguish between the biological

> mechanisms and the meaning of an illness. Some illnesses such as rheumatoid arthritis are explained in immunological concepts as an autoimmune disease -- the body develops antibodies against itself. Treatment requires medical intervention with drugs. Clinical ecology sees most immune reactions as caused by environmental agents outside of the self. The individual can act to control this exposure. These two explanations of allergy have very different symbolic meanings. (Gibson, 1985)

In the Committee's view, the contrast between the approaches taken by the two specialties is overstated, but the writer does show the importance of treatment that recognizes the symbolic meaning of illness. The importance of this may be greater if, as we were advised, the success rate of psychiatry with those diagnosed as suffering from somatization disorder is not high. In an analysis of the illness and of various treatment methodologies, one writer has noted:

> Few patients are more dissatisfied with their medical care than persistent somatizers, and very few are less welcome

> in the offices of most doctors. They consume an inordinate amount of their doctors' time, energy and patience and a disproportionate slice of medical insurance plan disbursements. Nonetheless, they often do not receive adequate treatment, their physicians rarely enjoy the satisfaction of a clinical job well done, and the patients are frequently labelled "crocks" (Lowy, 1975).

In viewing this as relevant to the work of clinical ecologists, we are not suggesting that all positive results of their work are due only to placebo effects; in the same way, the fact that earlier investigations of a patient did not result in a diagnosis the patient was willing to accept in no way means that the diagnosis made was inaccurate nor does it necessarily reflect on the quality of medicine practised by the physicians involved.

We reiterate our concern that some of the persons practising in this field seem predisposed toward a finding of environmental hypersensitivity and toward the use of certain treatments. At the same time, we wish to emphasize that this did not appear to be true of all of the doctors we observed, nor do we believe that this is a problem unique to this field of medicine. (For example, we heard from many people concerned about what they described as an over-reliance on drug therapies in other fields of medicine.)

However, with a patient population that presents such a range of symptoms, and with the uncertain state of the art with respect both to theories of causation and to the most often-used tests and treatments, it is particularly problematic when such a predisposition exists.

For example, we were struck by how readily the presence of excess Candida in the body is said to cause extremely diverse symptoms. Our intention here is not to reject this theory of causation, but only to note that it is often accepted more readily in individual cases than might be expected on the basis of current research.

In chapters 6 and 7, we described the tests and treatments most frequently employed by clinical ecologists. Here, we wish to record our concern about risks associated with certain of the approaches taken, either as observed by members of the Committee or as reported to us. They are:

1. The use of megavitamins (e.g., B-6, C) to deal with specific patient reactions.

2. The prescription of long-term diets without adequate consideration of possible nutritional risks, especially of dietary regimens prescribed for children at a period when they are developmentally labile.

3. The use of certain drugs with substantial risk associated with long-term use in the absence of adequate monitoring: e.g., ketoconazole for the treatment of Candida albicans.

4. Recommending major life changes too quickly, possibly causing major financial problems, upsetting the patient's emotions or sense of wellbeing and harming family relationships.

None of our concerns about particular approaches found in the practise of clinical ecology should be interpreted as meaning that all who work in the field employ such techniques. Clearly, that is not so.

IV - The Tests Used by Clinical Ecologists

The Committee's analysis of the testing procedures is contained in chapter 6.

There is very little controversy about the diagnostic aspects of the history, physical examination and routine laboratory tests. When used on the basis of reasonable medical indications, the tests for immune system function, measurement of trace elements or nutrients and the various challenge tests give useful information to aid diagnosis. This is also true of the Rinkel technique of serial titration when used for diagnostic purposes. The use and results of these tests have to be viewed in conjunction with the history and physical examination. Indoor air quality measurements are available and greater use of the technology, perhaps with government support, may also help in diagnosis in selected situations.

Other tests are considered more controversial. The first three, (Rinkel, when used to establish a starting neutralization dose; intradermal provocative and sublingual provocative) are used commonly by clinical ecologists in Ontario, as well as by ecologists and other practitioners in the United States, who feel they are useful and accurate. The Committee's conclusion is that these tests are scientifically unproven at present.

Other tests (cyto-toxic blood tests, hair analysis, therapeutic trials for Candida infections and Vega II-type machines) are highly controversial at the present time. The Committee was unable to find satisfactory published evidence that these tests or procedures are effective for the diagnosis of conditions such as environmentally hypersensitivity.

V - The Treatments Used by Clinical Ecologists

An analysis of treatment procedures is contained in chapter 7.

With respect to the treatment of chronic adverse reactions, the Committee is of the view that there is evidence to support the use of avoidance procedures, particularly those that involve less extensive environmental changes. The elimination diet, as one form of avoidance, is demonstrably effective, as is the use of vitamin and mineral supplements to maintain adequate nutrition. The rotation diet, used when many foods are suspected of causing environmental hypersensitivity, may be effective as an avoidance procedure, although there is not adequate scientific proof that such a demanding and restrictive approach is necessary. The use of extract therapy (the Rinkel method or the provocative-neutralization method), and the use of organically pure food and water have not, as yet, been scientifically demonstrated to be valid.

In the treatment of Candida albicans, nystatin is considered to be effective and has minimal side effects, although the effects, if any, of long-term use or even use for several months, are not yet known. Ketoconazole, while considered effective, presents the risk of serious side effects if used for long periods of time. The difficulty with these treatments rests with the unproven thesis that excess Candida can produce environmental hypersensitivity.

A number of treatments for acute adverse reactions to environmental agents are considered. The use of megadoses of vitamin C, nalaxone treatment and the administration of intradermal or sublingual extracts for this purpose have not, in the Committee's opinion, been proven scientifically to be effective.

Although we were unable to find methodologically sound studies demonstrating their effectiveness, environmental control units seem helpful as a means of providing relief for acutely ill patients and for the purpose of providing an ideal environment within which testing procedures can be undertaken with these patients.

Other treatments (not in common use) -- transfer factor, tissue extract, large doses of vitamins and minerals, thyroid therapy, and the removal of mercury fillings -- have not, as yet, been proven to be effective.

VI - The Patients

In chapter 5, we summarized the information provided to the Committee by patients said to be suffering from environmental hypersensitivity. We have reached a number of conclusions that form the basis for several later recommendations.

1. The patients we heard from are not homogeneous in their symptoms or the seriousness of their illness, and they range from the mildly ill to the seriously disabled. In the search for an explanation of their illness, many have been seen by several specialists. While a great number report satisfaction with the treatment and the procedures used by clinical ecologists, many continue the search for a total answer to their problems. In Appendix 11, we have included a list of the many "alternative" therapies reported to the Committee by patients.

2. We found that patients tend to be overwhelmed by confusing and conflicting information about the possible causes of their illness. Media reports often focus on the strong views held by those who represent the extreme ends of what is, after all, a continuum of views; decisions on where to seek relief from symptoms

seem to depend on which of the many sources of information reaches an individual patient. Not only does the oversupply of opinions and data create confusion, it also encourages patients to move from doctor to doctor, from one therapy to another, in an effort to fully understand all possible causes of one's continuing health problems. In this, their behaviour seems consistent with reported findings on why people seek treatment by alternative medicine. (Moore, et al., 1985)

3. The information patients do obtain fills a vacuum caused by the absence of identifiable sources from which they can get accurate information about the state of knowledge in this field. It is worth pointing out that news of the existence of the Committee itself brought a steady flow of requests for members' advice on where individuals could obtain a balanced opinion about problems related to environmental hypersensitivity.

4. We found that the response to patients by the Ontario Health Insurance Plan (OHIP) is clear in some respects and not in others: the plan does not now cover the cost of provocative testing or of neutralization treatments, though the Ontario Medical Association Tariff Committee did include provocative

testing in the fee schedule (1971 to 1979), but that was qualified to include bronchial challenge testing only (Moss, 1985).

At the same time, OHIP has authorized the treatment of individual patients in environmental units in the United States. In some cases, the costs of transportation to the unit have been covered as well. The costs of provocative testing and neutralization treatments are not covered by OHIP when they are carried out within these units, although this does not seem to have been true in every case. We have not been able to determine how and when patients are authorized for treatment within one of these units; the primary determinant appears to be whether the referral is judged appropriate by the patient's doctor and whether the patient can pay the costs not covered by OHIP.

5. There is, of course, the obvious problem of how patients meet expenses not covered by OHIP. The response of private health care insurers varies and, when expenses are paid, coverage is accompanied by ongoing skepticism and regular review. The cost to patients varies and can be significant if uninsured test and treatments as well as major environmental changes are recommended. Clearly, those patients

without resources risk being denied the choice of even such less expensive measures prescribed by their doctors as modest environmental alterations and dietary change.

6. We are of the opinion that serious difficulties can arise when patients seek access to financial and other kinds of support services. We view this as partially a medical issue because the decision made is often tied to the opinion of the individual doctor to whom the applicant for assistance is referred. However, we believe the problem is a broader one and relates to the failure to recognize that the person is disabled or unable to carry on a normal life, regardless of the reasons for the disability. Perhaps the best example of this is the case of the young woman who has twice been a patient in a U.S. environmental unit at substantial expense to OHIP and others, and who has otherwise been confined to her home for most of the past two or three years; nonetheless, she has twice been denied disability benefits under The Family Benefits Act.

Under section 1(3) (b) of that Act, a "disabled person" is defined as one "who has a major physical or mental impairment that is likely to continue for a long period of time and who, as a result thereof, is severely limited in activities pertaining to normal living, as verified by objective medical findings accepted by the Medical Advisory Board."

The then-Minister of Community and Social Services acknowledged the difficulty of evaluating "such a specific medical/health related issue within a social services ministry", (Drea, 1984) particularly when the issue is as controversial as environmental hypersensitivity. However, we are concerned that individual applicants for assistance are being denied medical benefits because there is a failure to see beyond the controversy to the applicant; furthermore, there seems to be a preference for the "objective" opinion of a physician practising conventional medicine that the patient is mentally disabled rather than for the "objective" opinion of a clinical ecologist that the cause is environmental. Much seems to depend on the viewpoint of the local member of the medical advisory board who makes a recommendation to the director in each individual case.

There is evidence that there are similar problems when an applicant seeks to be classified as permanently unemployable under the Family Benefits Act, applies for a Canada Disability Pension, asks for supplementary funding to cover the cost of special foods on a prescribed diet or even seeks general welfare assistance. Those who apply for Worker's Compensation benefits face the added difficulty of having to demonstrate that the illness is employment based. Our experience suggests that, as individual doctors broaden their definition of workplace elements that can affect individual capabilities, the number of successful applications increases.

Committee members believe that it is important to recognize that ongoing debate about the etiology of the disorder has obscured the fact that there are a number of persons who are ill, whose condition has not been recognized and who are being poorly served, particularly in their need for support services, because of the existing controversy about the validity of environmental hypersensitivity as a diagnosis. Some patients seem to serve as classic examples of how people can "fall between two stools" when professionals disagree about the nature of their problem.

The labels placed on patients can be extremely important, lending symbolic meaning to them and sometimes playing an important role in determining how effective the treatment is. In our recommendations, we place a high priority on research designed to establish appropriate diagnoses. In the interim, however, people who are sick -- especially those who are severely ill -- need help, compassion and support as they struggle with their disabling conditions.

VII - General Information

At present, at least eleven doctors in Ontario are known to practise clinical ecology. The Canadian Society for Clinical Ecology and Environmental Medicine was recently founded and is headed by Dr. John Maclennan; another group, the Canadian Human Ecology Foundation, is located in Dundas, Ontario and has branches in Hamilton, Kitchener, Ottawa, and Toronto.

Parents for the Environmentally Sensitive, headed by Mrs. M. Nikiforuk, actively seeks support for patients. In addition, an *ad hoc* committee, established in Toronto under the chairmanship of Dr. G. Nikiforuk, includes members with a wide range of expertise and background. It is now engaged in the development of research proposals in the field of environmental hypersensitivity.

Although we were unable to gather definitive information on the practise of clinical ecology in other provinces, we are aware of at least three clinical ecologists in British Columbia; the B.C.

Plainair Environmental Allergy Society informed us that they have 200 members and are an active advocacy group in that province. Tests and treatments are not covered by the B.C. health insurance program; we were not told that any persons had gone to environmental units in the United States or that costs had been covered by the insurance plan.

There are also doctors practising clinical ecology in Alberta where, we were informed, the government health plan does not cover the cost of tests and treatments; nor are trips to the United States and treatment there paid by the health plan. The same is true in Saskatchewan, although the full costs for patients recommended for treatment in environmental units in the United States by Dr. John Gerrard (a member of this Committee) have been covered by the government. (These patients had been seen previously by the appropriate specialists -- allergists, neurologists, psychiatrists -- and had not been helped.)

We were unable to identify any Manitoba doctors practising clinical ecology but were informed that the health insurance plan in that province does not include payments for tests and treatments or for referrals to out-of-province clinics. Information from the provinces east of Ontario was scanty: there do not appear to be any clinical ecologists in the Maritime provinces and no examples of a provincial health insurance plan that covers tests, treatments or referrals to environmental units were cited to us. In Nova Scotia, the Allergic and Environmentally Sensitive Society has been formed and is seeking financial support from the government for referrals to out-of-province specialists and to units in the United States.

In the United States, there are more than 1,000 physicians practising environmental medicine. Dr. James O'Shea, past president of the American Academy of Environmental Medicine advised (1985) that there are 350 clinical ecologists who are members of this society. He also reported that there were more than 1,000 members of either the American Academy of Otolaryngologists or the Pan American Allergy Society who are using the testing procedures commonly employed by clinical ecologists. Our information is that there are at least five environmental units in existence (Dallas, Chicago, Denver, Watertown, N.Y., and Chadburn, N.C.).

The major tests and treatments used by clinical ecologists are no longer covered by Medicare and a number of major private insurers now similarly refuse to cover such procedures.

In the United States, there is considerable controversy within the medical profession about clinical ecology, most evident in the dispute between the American Academy of Environmental Medicine and the American Academy of Allergy and Immunology; in 1981, the latter released a position statement criticizing many of the techniques used by clinical ecologists. It has also just released two papers on "unproven procedures for diagnosis and treatment of allergic and immunologic diseases" and the "Candidiasis hypersensitivity syndrome".

There is much activity in the courts and this is reported in the Ecological Illness Law Report; there is extensive political pressure in some states for legislation or for legislative committees to review the issue. One member of this Committee, Dr. Gerrard, attended a hearing on clinical ecology held last April 30 by the California Medical Association.

There are a number of doctors in England engaged in practise and research in this field, particularly in relation to food intolerance. There are two "environmental units", one at a private hospital in London directed by Dr. Jean Monro, the other a recently opened private centre in Yorkshire, directed by Dr. Jonathan Maberly. In general, the National Health

Service does not cover the cost of tests and treatments carried out, either on an in-patient or out-patient basis. We were advised, however, that patients referred to Dr. Monro by consultants, after being fully investigated without success in a National Health hospital, had their full expenses covered by the National Health Service.

An environmental unit, directed by Dr. Colin Little, is located in a state-supported hospital in Melbourne, Australia, where patients' stays are financed privately.

VIII - The Positions Taken by Relevant Associations

The Committee heard from a number of professional associations, societies, committees, etc., interested in the field of environmental hypersensitivity. In some cases we received briefs specifically addressed to us; in others, we obtained papers released recently by organizations. Where possible, we have appended copies of the findings or recommendations they contain to this report.

We met with members of the Canadian Society for Clinical Ecology and Environmental Medicine and also received written proposals and recommendations from them. They recommended that the major tests and treatments used by clinical ecologists be covered by OHIP. They accept the Committee's statement that existing research into the efficacy of these tests and treatments is insufficient and they strongly support further work in this area. They indicated their eagerness to be part of the development of a research design and their willingness to accept the results of good research designed on this basis.

We did not receive a formal brief from the Ontario Medical Association but understand that their present view is that the tests and treatments used in this field remain unproven and ought not to be financially supported until their validity has been scientifically demonstrated. As we have already noted, sublingual and intradermal provocative testing were once part of the fee schedule but have since been removed. The Association denied the request made to them recently to establish a specific subsection on clinical ecology within their organization. The OMA has recently established an "adverse reaction reporting program", a pilot project that asks physicians to provide information about food sensitivities reported to them by their patients. The committee managing this program is chaired by Dr. Michael van Veldhoven and reports to the Public Health Committee of the Ontario Medical

Association.

The Committee met with the chairman and one other member of the Allergy and Clinical Immunology subsection of the Ontario Medical Association; its position is that the theories of those practising clinical ecology and the tests and treatments they use are unproven and should not be supported unless and until they are shown to be effective.

As noted previously, the American Academy of Allergy and Immunology has issued position statements that set out their view that the theories and procedures adopted in the field of clinical ecology are unproven. These position statements are included as Appendix 12.

The Committee met with representatives from the Ontario Allergy Society and received its position paper; their primary proposal reads as follows:

> A committee of investigative scientists be appointed that must be acceptable to the allergists and the ecologists of Ontario. This committee must evaluate testing and treatment procedures in a scientific fashion regarding patients undergoing ecologic investigation The decision of the committee must be

> binding and acceptable by both the allergists and the ecologists.
>
> The members of the Ontario Allergy Society will be happy to accept the findings of this select investigation group. Should the testing and treatment procedures be shown to have merit we would be happy to accept them, otherwise a premature acceptance of the ecologists unproven techniques would undoubtedly introduce many other unproven treatments seeking early credibility.

The American Society of Environmental Medicine has published a position paper dated 1984-1985, a copy of which is included as Appendix 12. The Society endorses a number of tests and treatments, under circumstances that are set out in the report. These include the following:

1. Serial end point titration.

2. Intradermal and sublingual provocative testing.

3. The Prist test.

4. The RAST test.

5. Inhalation challenge test.

6. Elimination and rotary diversified diets.

7. Avoidance.

8. Extract immunotherapy.

9. Sublingual and subcutaneous neutralization therapy.

10. Comprehensive environmental controlled hospital care.

11. Vitamin, mineral, lipid and amino acid replacement therapy.

12. Symptomatic drug treatment (only when the above measures are ineffective).

Susan Daglish, executive director of the Ontario Allergy Information Association provided us with an informal statement on environmental hypersensitivity. In summary, it states that:

a. Some individuals may react physically, and behaviourally to foods and environmental substances.

b. Traditional allergy treatment is meeting the criteria of science but failing to meet the needs of a growing number of patients.

c. Clinical ecology often meets the perceived needs of the patient but has not yet met the accepted standards of scientific validity.

d. It is recommended that clinical ecology be subjected to careful and objective study.

The Committee obtained the Report on Food Intolerance and Food Aversion prepared by a joint committee of the Royal College of Physicians and the British Nutrition Foundation in England, 1984; their conclusions and recommendations are included in this report as Appendix 13.

We appreciate the information and reviews of the literature and research in the field, given us by those professional organizations, some of long standing, and are pleased to append them to our report.

Many other briefs and reports were received from persons and organizations interested in the issues involved in environmental hypersensitivity. For example, a number of patient organizations based in Ontario and elsewhere submitted briefs and made recommendations to us. In addition, a number of individual doctors, some of whom are practising clinical ecology and some of whom are not, wrote to us. A summary of all of the recommendations received by the Committee are included as Appendix 8.

IX - The Professional Debate

As a Committee, we have become increasingly dismayed at the polarized and adversarial positions being taken in the United States on the issue of environmental hypersensitivity. Our unease has been increased by the realization that there is evidence, although fortunately not yet extensive, that the same hardening of attitudes is taking place in Ontario, often fueled by media reports that highlight the extreme positions referred to elsewhere in this chapter. The toll, emotional and financial, on those involved in disputes in the United States was apparent to us; increasingly, the conflict seems to be moving into the courtroom.

We believe that confidence in the health care system is eroded when productive dialogue between different medical specialties disappears or is replaced by acrimonious debate before a confused public. Protagonists take up positions that are clearly untenable: e.g., "all medical treatments are based upon sound scientific research"; "the environment plays little role in the generation of disease"; "all the identified patients are emotionally ill". Research that is clearly unsound methodologically is given greater weight than it deserves. There is a tendency to assert the validity of one's position on the basis of the quantity, not the quality, of the clinical trials that have been undertaken. Success is measured in the name of the latest clinician or researcher to cross from one "side" to the other.

This Committee feels strongly that taking an absolute stance in this field is not only risky scientifically, given that there is a great deal we do not know about our environment and its effects on us, but it is also unproductive and divisive, antithetical to the task of promoting collaborative efforts that will help in understanding and treating the problems of a growing number of patients.

We emphasize again the need to develop approaches that bring together all practitioners, however their perspectives differ, and to do so before the gulf between them becomes as great as it now appears to be in the United States. We quote the position taken by a doctor and researcher in California who, at various times, has been seen as both a proponent and opponent of clinical ecology. We do not fully agree with all his observations, but repeat them here because they show a person willing to accept uncertainty in a field where answers are far from obvious:

Efforts to condemn the practice of Clinical Ecology (or Environmental Medicine, or its next name) will only reinforce the isolation of patients who have sought their help, and continue the paranoia upon which some of these physicians thrive. It also makes these physicians and their patients the "underdogs", which improves their ability to attract media attention. This in turn puts the issues in the political arena, where an impartial evaluation is unlikely.

Those techniques, like chiropractic, homeopathy, naturopathy, etc. exist because of the vacuum that exists in the allopathic medical care system with regard to mild, multi-organ symptoms. Most specialties "diagnose" these ailments as "mental", and half-heartedly recommend psychiatric consultation. Yet, psychiatrists are no better at treating the "somatizing patient" than are other specialties. This should give us pause -- is the "diagnosis" correct? And what

> should we expect patients to do under such circumstances but to search for someone who will take their symptoms seriously?
>
> These patients deserve a careful workup with consideration of a number of differential diagnoses for multi-organ symptomatology (Jewett, 1985).

B - RECOMMENDATIONS

I - Prevention

In our conclusions, we acknowledged our concern, as a Committee, about the impact of a growing number of possibly toxic agents in our environment. That concern extended well beyond the relatively narrow range of issues assigned to us. In light of this, we wish to begin this section of the report by recognizing that the prevention of sickness is as vital in this area as it is in any other area of health care. Measures that increase the number of healthy, disease-resistant persons and minimize exposure to factors that are known to produce illness, are important goals in any health care system.

While it was not possible for the Committee to address the issue fully, we have included as Appendix 14 the final chapter of a report prepared for the federal government that describes an ideal prevention framework. (Jackson, 1985) In addition, we believe that the following are examples of the kind of preventive action indicated in this area:

> **Recommendation 1:** Because many people suffer from exposure to respirable suspended particulates (RSPs) or secondhand cigarette smoke, we strongly support measures to minimize exposure to it. These include: enacting by-laws, such as those now in effect in a number of Ontario municipalities, that control smoking in most public places. We believe that it is appropriate to consider further restrictions to include such locations as waiting areas for public transportation. It seems to us appropriate that smoking be controlled in all public forms of transportation, including buses, trains and airplanes.

> If it is necessary to prohibit smoking in these areas, in order to achieve adequate control of the problem, we would support such action.
>
> Laws that regulate smoking in all workplaces, appear necessary, given the major difficulties involved in producing ventilation systems that would eliminate the problem. Measures that discourage smoking in schools and that prohibit the presence of secondhand smoke in areas where there are pre-school child-care programs would be clearly beneficial to children, particularly those with such respiratory diseases as asthma or recurrent episodes of bronchitis.
>
> Existing technology to measure levels of RSPs in the air that may not be discerned easily but are possibly harmful, should be more fully utilized than it now is.

Finally, we believe that efforts now being made to inform the public of the possible difficulties associated with secondhand smoke should continue -- for example, the booklet prepared by the Ottawa-Carleton Regional Health Unit advising parents of the benefits to children of smoke-free air in the home.

> **Recommendation 2:** We recommend action to ensure that patients and others have accurate information about food content, chemicals and other products in everyday use, information to which those concerned about environmental issues are entitled.

Dr. J. C. Alexander (1985) of the Department of Nutrition at the University of Guelph and others advised us that the labelling requirements for chemicals, drugs (particularly excipients in drugs) and household articles are much less extensive here than in the United States. Moreover, information about contents is not available in an easily understandable form.

While labelling requirements are more stringent in regard to foods, there are still problem areas, i, e., information on the use of hormones or antibiotics in meat production and on the plant source of vegetable oils. We support the recommendation made in the Report on Food Intolerance and Food Aversion, that consideration be given to "the feasibility of setting up a central data bank where food product composition (should) be examined. Products that are free of ingredients known to be responsible for intolerance should be registered in the data bank, and doctors and dieticians should have access to it." Such possibly dangerous substances as sulphides should be identified and physicians should be educated about their possible effects. A more extensive statement of that committee's proposal is included as Appendix 15a; a labelling proposal that was presented to us in Ottawa is also included as Appendix 15b.

In general, we support reasonable measures designed to provide consumers with information that they consider essential if they hope to prevent symptoms by avoiding certain foods, chemicals and other substances.

We believe that modest, commonsense approaches to avoidance of suspected substances -- approaches that can be implemented without major cost -- should not have to wait on verification of all alleged sensitivities. Some of the measures being adopted by specific school boards have been cited as examples. Those who understand the apprehension of patients and seek to provide them with reasonable support and assistance are to be commended. We recommend that school personnel in particular be encouraged to help parents in their search for ways to reduce their children's susceptibility to illness.

As noted previously, many people emphasized the need to halt the proliferation of toxic elements in our environment. They expressed particular concern about acid rain and about the number and level of pesticides in general use. While these are issues beyond our mandate and expertise, we have no hesitation in supporting these objectives as highly relevant to general health promotion.

II - Research

> **Recommendation 3** We recommend that research be undertaken to establish the prevalence of environmental hypersensitivity and to determine which of the current tests and treatments being used by clinical ecologists are demonstrably useful.

We have noted the serious definitional and theoretical difficulties that make estimates of the prevalence of environment hypersensitivity impossible. Further, the tests and treatments most commonly used by clinical ecologists have not been scientifically demonstrated to be effective. While we would not presume to set research priorities in the health field, and, while not everyone would agree with us -- including some of the people with whom we met -- we are satisfied that research in these areas should hold a high priority.

To use Braunwald's description in relation to a different field, "this rapidly growing enterprise is developing a momentum and constituency of its own, and as time passes, it will be progressively more difficult and costly to curtail its materially if the results of carefully designed studies prove this step to be necessary." (Braunwald, 1977).

The timing is particularly appropriate, since both those in Ontario who support the practice of clinical ecology and those who question it have expressed their willingness to accept the results of well-designed research studies.

Practical and political realities are such that reliable information is needed quickly. Furthermore, it is important that patients receive clearcut answers to their questions about the validity of procedures used to diagnose and treat their illnesses. As well, it is crucial that this research be methodologically sound, in order to avoid any attempts to discredit research findings that challenge the position of either of the opposing sides of this controversial issue.

If such research is undertaken, reliable information about effective diagnosis and treatment may be available sooner than is now the case with many other unevaluated procedures that are currently part of standard medical practice. (McKinlay, 1981)

> **Recommendation 4:** To provide an estimate of the prevalence of environmental hypersensitivity and in the absence of clear diagnostic criteria, we recommend a cross-sectional survey be undertaken using the definition set out in chapter two. Because subsequent investigation may prove our definition inadequate, it should be used to identify persons with environmental hypersensitivity for the purposes of this study only. Such a survey would require the cooperation of those Ontario physicians who are members of the Society for Clinical Ecology and Environmental Medicine.

With each patient's consent, the medical records of those thought to have an environmental sensitivity disorder would be made available by the practitioner to an independent review panel consisting of at least two physicians with an appropriate breadth of perspective.

(It might be necessary to establish more than one review panel.) The panel would decide whether or not each patient identified by the clinical ecologist met the diagnostic criteria; after collecting information, estimates of the proportion of the population currently affected and the age and sex distribution of those with the condition should be possible. Furthermore, findings might suggest whether there were some common factors amongst those so identified.

> **Recommendation 5:** Research into diagnostic testing procedures should comprise random, controlled clinical trials conducted on the major tests currently used by clinical ecologists in Ontario, i.e., provocative testing, Rinkel technique. In addition, those treatment methods currently used by clinical ecologists should be rigorously tested for efficacy. Treatments to be considered for evaluation include intradermal and sublingual neutralization, the rotary diversified diet and the long-term use of nystatin.

> **Recommendation 6:** The Committee recommends that the research be carried out in a multi-disciplinary investigative and therapeutic environmental unit, established for a defined period of time, for the assessment of environmental hypersensitivity disorders.
>
> We recommend that funding for three years be provided, because this is sufficient for completion of the initial investigations; after three years, it might be reasonable to expect that such an environmental unit would sustain itself through other funding sources, e.g., grants obtained in open competition.

Such a unit is necessary in order to reach a research design agreed on by all of those involved in its development; it should be established at a university-based hospital following advertised requests for proposals. Perhaps it should be established as part of a larger setting that deals generally with environmental illness. Both in-patient and out-patient services should be available.

It is essential that the successful research proposal be designed and managed on an inter-disciplinary model, including both clinical ecologists and those who bring expertise from other fields, e.g., allergy, immunology, toxicology, environmental illness, nutrition and psychiatry.

We have considered which other areas of research might be addressed by the unit and have decided that expectations in this regard should not be rigidly fixed before funding proposals are received. Appendix 16 sets out research recommendations received from researchers in the field. Appendix 8 lists research recommendations received from patients and other interested persons.

III -The Funding of Tests and Treatments

1. Testing procedures

In chapter 6, we reviewed the existing literature on the efficacy of a range of testing procedures, used by those practising clinical ecology. This leads us to the following recommendations:

> **Recommendation 7:** We recommend the following procedures as being of demonstrable validity and worthy of initial or continued financial support:

1) patient histories;
2) routine lab tests
3) nasal inhalation challenges
4) double blind food challenges
5) indoor air quality testing
6) the Rinkel technique (when used for diagnostic purposes)

We have noted the heavy emphasis placed on taking patient histories and feel this is extremely important when dealing with patients whose symptoms are not easily diagnosed and are possibly related to their exposure to the environment. Moreover, we believe that ongoing counselling and monitoring patients' progress are important in implementing measures such as avoidance and dietary change.

> **Recommendation 8:** We recommend that the fee schedule permit an enlargement of the fee to be charged if added time is required to obtain good histories, to counsel a patient on avoidance procedures and to monitor the patient's performance.

Second, we view routine laboratory tests as an appropriate part of the investigation, in order to eliminate other diagnoses.

Third, we find that nasal inhalation challenges are supportable providing that they are done with appropriate care and if they are evaluated in reference to local reactions involving the nasal mucosa or the respiratory tract using equipment that reliably detects nasal responsiveness.

> **Recommendation 9:** We recommend that consideration be given to expanding the nasal inhalation challenges covered in the fee schedule to include a wider variety of compounds and antigens, i.e., formaldehyde, phenols, etc. Consideration should be given to the kind of training physicians should have before undertaking such challenges.

Fourth, while double blind food challenges are difficult and subject to problems of administration and interpretation, in our view they are an appropriate investigative technique following an elimination diet and they should be supported. In clinical practice, an open challenge is adequate if it is measured by objectively determined changes in the patient.

Fifth, as previously stated, we are of the opinion that the measurement of indoor air quality is appropriate and possibly helpful when indicated by the patient's history.

Finally, the Rinkel technique, used as a diagnostic tool, is, in our view, an appropriate procedure.

We find that the following procedures have not been scientifically demonstrated to be effective:

a. The Rinkel Method (end-point titration), when used as a means of establishing a starting dose for neutralization purposes.

b. Serial intradermal provocative testing.

c. Sublingual provocative testing.

The composition of the Committee itself and its role as an *ad hoc* scientific/technical advisory body might suggest that the recommendation here is an easy one; governments should support through public funding only those medical services or technologies, the effectiveness of which has been demonstrated through the use of optimal methodology. If public financial support is to be limited to procedures of properly demonstrated efficacy, the above tests do not qualify.

J. McKinlay (1981) has said that "once the state acts to support an innovation and social policy is implemented, the career of an innovation can be viewed as having passed the point of no return". We agree that, once supported, a procedure takes on a certain momentum and can be difficult to halt, even when it proves less than promising; a considerable degree of caution in funding would seem to be appropriate.

It is easier to deny support for a procedure that has not yet been formally evaluated when that denial is accompanied by the recommendation that research into the procedure's effectiveness be given high priority; moreover, it is necessary to ask why it is unethical to withhold funding for as-yet unevaluated innovations on certain patients in order to ascertain their effectiveness or potential for harm and yet quite ethical to subject patients to an innovation, despite the absence of reliable evidence concerning its effectiveness or its potential for harm. (McKinlay, 1981) We are not persuaded that an innovation should be endorsed simply because the established practise of medicine has within it a number of standard procedures and recent innovations that fall short of demonstrated effectiveness.

However, we also recognize that, in many cases in the past, the decision to support a medical procedure was made in the absence of demonstrated effectiveness. Moreover, we are certain that similar decisions will be made in the future. To some degree, this is simply a way of accepting the truth that practical, political and ethical factors play a role in this type of decision making.

It also recognizes that there are often difficulties in designing, funding and completing good research and that these can be compounded by the fact that certain theories may not apparently lend themselves to accurate evaluation. In addition, there is the inconsistency of adhering staunchly to strict criteria when considering new tests or treatments when, in the past, these have not been applied to treatments that have long obtained financial support. The problem is even further compounded by the fact that the Committee is dealing with investigations and therapies used by qualified doctors; the medical profession has, for a long time, strongly -- and properly -- defended its right to seek and apply new clinical approaches.

We recognize that the proposed research will take some time to complete and that there are many people who argue that support should be given to these procedures until the results of that research are known. The most persuasive reason in favour of that argument is the plight of those seriously ill patients who find these tests, and the treatments that flow from them, helpful.

The Committee has attempted to identify factors that may be relevant to determining whether to support a test or treatment that has not been validated scientifically. We have been greatly aided in this effort by Dr. David Roy, a bioethicist who is the Director of the Biomedical Research Institute in Montreal.

While we recognize that the following is an incomplete list, we believe that these are relevant factors.

Factors that support public funding:

a) The intervention is relatively inexpensive or is the least costly of the tests or therapies said to deal with the problem.

b) There is a substantial amount of first evidence of relief or success with the use of the therapy.

c) Use of the intervention is growing.

d) The therapy is said to produce a detectable difference within a fairly short time.

e) The therapy is proximate to the medical model; it uses approaches that are similar to those in current use.

f) The theoretical explanation for its success has promise.

g) There is no evidence of serious harm to patients and there is no evidence of the risk of such harm.

Factors that support exclusion from public funding:

a) A number of studies suggest that it is not effective, i.e., that it is not an effective diagnostic procedure or that there are a large number of false positives and false negatives.

b) There is no substantial anecdotal evidence of relief through the use of the procedure.

c) There is clear evidence of harm to patients or there are extensive secondary effects.

d) There is growing anecdotal testimony that the approach is useless.

e) There is no explanatory model for its effectiveness or the theories espoused have no promise.

f) The procedure is quite remote from accepted medical paradigms.

g) It is not susceptible to a methodologically sound study.

h) It is susceptible to financial exploitation or is too costly in relation to other options.

i) There are alternative, established methods of achieving the same result.

j) The therapy, if supported, cannot be controlled adequately while sound research is undertaken.

We emphasize that, even if consideration of these factors should lead to a positive decision, public funding is justified only while sound research is being undertaken to establish the efficacy of the procedure.

With respect to these three tests, the factors supportive of public funding are generally met. There are few other examples in medicine where so many symptoms are accepted as positives and it is difficult to understand how a slightly lower dose is quickly able to eliminate the symptoms (and this is seen as part of the validation of the testing). There is also some indication of individuals being harmed by the testing, though we heard of no major problems. If there is any serious harm, it might be found in any cases where major lifestyle changes are made when this is, in fact, unnecessary.

The answer is less clear in relation to the factors that indicate exclusion from funding. There are at least as many studies leading to the conclusion that the tests are ineffective as there are those leading to the opposite conclusion. We have some anecdotal evidence to suggest that the testing was not useful. The possibility of financial exploitation, if full financial support is provided, must be acknowledged, though we do not suggest that we have evidence that this is associated with the present practice here in Ontario.

Given the fact that the decision that has to be made is not based on scientific data, it may be beyond the Committee's ability to do more than simply identify those factors it sees as relevant in making such funding decisions. We have not found this issue an easy one and not all the members of the Committee reached the same conclusion; accordingly, we do not make a specific recommendation on this issue. However, we are agreed that any recommendation to provide funding before the research is done might imply more than was intended and might create a situation that could not be reversed, regardless of the results of that research. There is much evidence to suggest that available funds would be better spent on establishing a unit within which extensive and methodologically sound research could be undertaken quickly; it could also provide basic supports to those patients who most need assistance, until the validity of one or more of the tests and treatments is established.

> **Recommendation 10:** We recommend that the following procedures not be considered at this time as worthy of financial support as insured health services:
>
> a) Blood tests for Candida.
>
> b) Vega II Machines.
>
> c) Cytotoxic tests.
>
> d) Hair analysis.

We are unable to find any peer-reviewed studies supporting blood tests to diagnose Candida as a cause of environmental hypersensitivity. Therefore, we recommend that these tests not be publicly funded when used for the diagnosis of environmental hypersensitivity disorders.

Vega II machines have not been demonstrated to be effective and the Committee has not been given any clear model that explains the machine's testing capability.

The absence of sound studies demonstrating the effectiveness of cytotoxic tests and the difficulties associated with interpretation that make uniform results between examiners hard to achieve, and the widespread rejection of the test by both proponents and opponents of clinical ecology lead the Committee to the view that this test should not be supported.

With respect to hair analysis, it is the Committee's opinion that this rarely used procedure does not meet either the scientific criteria or the less rigorous criteria we have established for public support of methods of diagnosing environmental hypersensitivity.

2. Treatments

In chapter 6, we reviewed the literature that evaluates the various treatments used by those dealing with environmentally hypersensitive patients. This leads us to the following conclusions:

A - Avoidance and Diets

> **Recommendation 11:** We find that the following treatments have been demonstrated to have validity and should receive initial or continued public financial support:
>
> 1. avoidance;
> 2. the prescription of nutritionally safe diets.

As indicated above, the time involved in taking detailed histories, prescribing avoidance approaches, and monitoring compliance should, in our view, be recognized in the fee schedule. Our recommendation here is affected by recognition of the economic and other factors that make it difficult for all physicians to enlarge the focus of patient care to include prevention and health promotion.

In so recommending, we do not wish to demonstrate unwarranted confidence in the ability of physicians to diagnose and deal with environmental hypersensitivity through the taking of histories, avoidance and the monitoring of symptomatology. As well, we have already expressed our concern about the prescription of difficult, expensive or major lifestyle changes early in the treatment process on the basis of histories supplemented by tests that have not yet been scientifically validated.

The use of elimination diets is an example of avoidance as a treatment technique. As noted in chapter 7, the more elaborate rotation diet is less justifiable unless absolutely necessary. We are satisfied that physician time spent on the development of diets and the monitoring of patient progress while on them, should be supported. With children in particular, such diets must be nutritionally sound. No presumption of a benefit to the child can obscure the importance of nutrition to the developing child and we are aware of the British report's warning that "inadequate diets abound -- either self-selected or prescribed by those without expert nutritional knowledge -- and they can be harmful". This was confirmed by Dr. Zlotkin (1985) in his discussions with Committee member Dr. Woodward.

Unless it has been previously used and found nutritionally sound, no restrictive diet should be prescribed until it has been reviewed by a qualified dietician. In cases involving adults, the patient must be made aware of any nutritional and other risks associated with the diet. It is important for him or her to be aware that a restrictive diet that reduces symptoms (for example, one involving the consumption of large quantities of fish) may also involve over-exposure to toxic elements such as mercury.

B - Vitamin and Mineral Supplements; Uncontaminated Food and Water; Nystatin

These procedures have not, as yet, been demonstrated to be scientifically effective in the treatment of environmental hypersensitivity.

We are aware that there are certain risks associated with megavitamin therapy and with long-term ingestion of vitamin and mineral supplements, particularly by children. There is research to suggest that multivitamin overuse can lead to overdoses (Issenman et al 1985). In addition, the definition of organic food is uncertain and many of the foodstuffs sold as organic may fall short of acceptable standards. The difficulties and openendedness involved in treating these as insured health services are obvious.

Nonetheless, we believe that application of the factors we consider relevant to decisions made in the absence of demonstrated effectiveness does support these measures in certain circumstances.

> **Recommendation 12:** The Committee recommends that vitamin and mineral supplements and uncontaminated food and water not be included as insured health services. We do, however, recommend that they be included in health care plans that provide coverage for drugs and other treatments when they have been prescribed by a physician, subject to defined financial limits. Moreover, those who receive social assistance should be eligible for payment through the associated drug or food supplement plans.

The difficulty in making a recommendation regarding nystatin is in the as yet-unproven hypothesis that excess Candida causes environmental hypersensitivity. However, the Committee recommends that nystatin should be financially supported because it is effective as a treatment for Candida infections and is associated with only minimal side effects. However, little is known about the possible effects of long-term use, which suggests caution in employing the drug.

> **Recommendation 13:** The Committee recommends that nystatin should be financially supported when prescribed for proven Candida infections. Long-term use of nystatin should not be supported until it has been demonstrated to be effective and safe.

C - Sublingual Neutralization and Intradermal Neutralization Injections

As already indicated, we have found these treatments to be unproven. The only issue is whether, in our opinion, these are worthy of financial support before research into their effectiveness is complete. In our opinion they are less supportable than are the tests discussed earlier. This finding is based primarily on the absence of an explanatory model that accords with present medical theories. In addition, these procedures, in our opinion, are more susceptible to financial exploitation than are those discussed earlier. We are further concerned, as already noted, about those risks associated with long-term use of extracts without preservatives.

> **Recommendation 14:** We do not recommend that the use of sublingual neutralization

and intradermal neutralization be approved at this time as insured health services.

D - Other Treatments

1. Ketoconazole: Given the possibility of serious side effects associated with long-term use of ketoconazole, its use for Candida should not be supported until more is known about Candida as a cause of environmental hypersensitivity.

2. Transfer factor: The capacity of transfer factor to endow non-immune recipients with cutaneous delayed-type hypersensitivity has been well documented. The practical therapeutic application is dependent on clearly defining the recipient's immunologic deficit. In accordance with this, transfer factor has been used to treat a wide range of disorders, including immunodeficiency diseases, neoplasms and chronic infections. In view of the many opinions concerning the immune status of the person who is diagnosed as environmentally hypersensitive and the lack of evidence to demonstrate the effectiveness of transfer factor in the treatment of environmental hypersensitivity, the Committee cannot, at this time, advocate transfer factor as a treatment for this condition.

3. Intravenous injections of large quantities of

vitamin C (e.g., 10 to 15 grams in a 30-minute period): In our view, the scientific evidence supporting this is weak and it is potentially harmful.

> **Recommendation 15:** We do not recommend that the use of ketoconazole, transfer factor and vitamin C injections be supported at this time as insured health services.

IV - Controls on Tests and Treatments

If OHIP funding is provided for the most widely used procedures (sublingual, intradermal and end-point titration tests and neutralization treatment), whether the decision is made before or after they have been shown to be scientifically effective, we believe controls should be placed on them, as follows:

> **Recommendation 16:** All materials, extracts in particular, should come from third-party sources, provided that such extracts are available, free of preservatives if required. Physicians should not be permitted to develop their own extracts and should not receive any financial benefit from the cost to patients of extracts. An allowance should be paid, if necessary for a

> physician's involvement in individual sampling. We recognize that, to be consistent, similar requirements should apply to extracts used by allergists.
>
> **Recommendation 17:** Both the cost per test and the maximum number of tests per year should be established.

Wherever applicable, all materials should meet standard pharmacological criteria to ensure sterility, absence of toxic effects, appropriate chemical content and biological effectiveness.

V - Information

We have expressed our concern that patients and others have had great difficulty obtaining current, balanced and understandable information, on the issues addressed in this report. In light of this, we have a number of recommendation to make.

a) Patients: We see the environmental unit as having an important role to play in this area. The protocol that seeks proposals for establishment of the unit should make this clear. Although the exact means of achieving this should be determined by those who are part of the new unit, the Committee suggests that *consideration be given to the following:*

> **Recommendation 18:** That the environmental unit undertake production of easily understood pamphlets on the more controversial issues related to environmental hypersensitivity; that it consider issuing a version of the Committee's report that is easily understood by members of the public; that it ensure adequate involvement in conferences, meetings, etc. sponsored by various advocacy and information bodies recently established in Ontario; that it offer assistance in ensuring that documents prepared by school boards, public health units, etc. are accurate and balanced.

> **Recommendation 19:** In view of the special role that can be played by the public health system, by medical officers of health and, in particular by public health nurses, we recommend that special efforts be made to educate and prepare public health nurses to function as a source of current information on

> environmental illness in general and on environmental hypersensitivity in particular. These nurses are often the first and most accessible source of information for the patient who is confused by conflicting reports elsewhere. Moreover, this role is consistent with the accent on prevention established in the new Health Protection and Promotion Act.

We considered whether financial and other support should be given to certain of the patient organizations that have been formed in recent years and that deal directly with patients and with others who are personally involved in environmental hypersensitivity. We recognize that there are limits to the informational role that a centrally based unit can play; at a minimum, the unit should keep in close contact with such organizations. More extensive support might be appropriate, particularly of those organizations that are committed to the preparation and dissemination of materials that reflect current knowledge in the field.

b) Physicians: The need to ensure that there is adequate dissemination of information extends as well to the medical profession. This is an essential part of efforts that will produce dialogue rather than debate in this field. Here, again, the environmental unit, as recommended, can play a major role; if it is formed, that fact will, itself, stimulate interest in the field.

The Committee recognizes and supports recent efforts to increase the amount of information about nutrition offered to medical students in a number of Ontario medical schools and suggests that education in this field be established as a part of the accepted curricula in all medical schools.

> **Recommendation 20:** We recommend that programs of continuing education be developed to provide practitioners with the scientific information, which is increasing, that both supports and questions recent, highly publicized theories and beliefs in the field of environmental hypersensitivity. As an example of why this is needed, we note that there is a general lack of understanding of the possibility that indoor air can be a contributary factor in illness.

We agree with the statement of the British Joint

Committee that examined food intolerance and food aversion and found "a need for diagnostic methods to be carried out and interpreted by strict criteria, especially because placebo responses are common. Potential diagnostic pitfalls should be given more publicity among the medical and dietetic professions and the inadequacy of untested methods should be emphasized".

VI- Patient Supports

The Committee has recognized the serious difficulties many patients face when they seek financial and other social support services and we recommend the following measures in order to alleviate these difficulties:

> **Recommendation 21:** All basic social assistance programs, particularly those administered under the Family Benefits Act, should be reviewed to ensure that they recognize how disabled some of these patients are. They should not be deprived of minimal levels of support because of disagreement within the medical profession regarding the causes of their conditions.

While we have already acknowledged the difficulty of making decisions regarding public funding of particular tests and treatments, there is no doubt in our minds that those who administer social assistance programs should be receptive to individual patients judged to be disabled, while the precise cause of their disability is being established. The same is true of those trying to determine whether working conditions are contributing to a patient's problems. Furthermore, patients might be helped considerably by being given access to existing homemaker and home care programs, provided that those involved are welltrained with respect to the particular needs of these patients.

> **Recommendation 22:** Because administrators of social assistance programs have wide discretion, the environmental unit should provide expert assistance to appeal bodies such as the Social Assistance Review Board, and to those groups, such as the Community and Social Services Medical Advisory Board, that provide appeal bodies with expert advice.

> **Recommendation 23:** In view of the important role of the individual physician to whom a person seeking social assistance, Worker's Compensation, etc.

is referred, those physicians must have current information about environmental hypersensitivity and must be willing to assess the patient's condition irrespective of any diagnosis attached to it. Here, too, the environmental unit should be involved in selecting such physicians and, in particular cases, should be available to bodies seeking expert advice.

> **Recommendation 24:** Private insurers need to be encouraged to take the same approach in situations where there is a clear disability but some debate as to causation. This is true for those programs that provide payments as replacement for lost income as well as for those that provide assistance for the costs of drugs, extracts and other interventions.

We agree with the statement, made by Wilkins and Hoey, (1985) that "Evidence is accumulating that shows that expanding the role of nurses in varied health care settings is a feasible, effective and economical means by which to improve compliance with recommendations in preventive health care and health promotion." Here, as in the matter of better dissemination of information, we see a special role for public health nurses attached to public health units. Those nurses well-trained for the task could tell patients about the environmental unit, about social assistance programs and other support services. They could also provide some advice to patients on avoidance techniques; could assist patients to understand the various dietary procedures; could serve as emotional supports, particularly for those persons who are isolated, either physically or psychologically.

Many people recommended that patients be reimbursed for the costs of making a wide range of physical and environmental lifestyle changes on their own or on the advice of their physicians. This included the costs of special diets, housing changes (e.g., a new furnace, change of insulation, new rugs, moving, etc.)

The Committee is of the opinion that, at this time, such measures should not be considered health care costs. That kind of open-ended approach to insured health care service, and such a precedent, coming, as it would, before sound research establishes the circumstances under which they are effective, militate against accepting these as costs payable by the Ontario Health Insurance Plan. Rather, we have considered these from the standpoint of those unable to afford them.

> **Recommendation 25:** At least a portion of the costs associated with special diets and prescribed vitamin and mineral supplements should be claimable through existing food supplement programs and drug plans. Controls would have to be placed on what would otherwise be an extremely openended level of support. However, we are satisfied that these measures, when prescribed by a physician after careful investigation and diagnosis, should not be denied those who are simply unable to afford them.

We do not recommend that structural changes, moving costs, environmental changes be funded before research is completed that demonstrates whether and when such measures are effective. However, we do feel that some persons are in serious difficulty if they are financially unable to make simple environmental changes (for example, the move from a boarding home where one is vulnerable to secondhand smoke).

Recommendation 26: In cases of genuine financial need, (i.e., people receiving social assistance) rent supplements or discretionary payments should be available for those seeking to make modest environmental changes.

While research is underway and at least until the results of the early investigations are known, the most seriously ill patients could undergo diagnostic testing and treatment at the unit without leaving the province. In addition, because the full cost of such procedures would be borne by research grants, patients would be relieved of some of the financial burden of their treatment while the decision to provide coverage under the provincial health care system is pending.

In the event that the unit is not developed, we do not see how, medically, ethically or politically, future patients in such ill health could be denied the right to financial support for treatment in environmental control units in the United States.

VII- New Programs

We have considered a number of proposals that programs be established for patients diagnosed as environmentally hypersensitive. To some degree, we have responded to this by recommending that the environmental unit be established that would treat a number of patients on an inpatient and outpatient basis as part of their program of research for a limited period. We recognize that this comes at a time when the emphasis in health care is being placed, quite properly, on measures designed to help people to be cared for in their own homes.

We have recommended that existing homemaker and home care programs develop a capacity to assist those patients who are unable to leave their home environment. More extensive coverage of costs being experienced by patients at home should await the results of the proposed research.

There are some current attempts to establish "half-way" houses for patients unable to remain at home but who do not require hospital-based care or who have left hospital after being inpatients for purposes of investigation and initial treatment. While we feel that government funding or establishment of such programs is premature, we see the environmental unit as playing a role in this matter.

> **Recommendation 27:** We recommend that the environmental unit collaborate with and

assist those involved in the development of special housing programs. Consideration should be given to establishing a nearby apartment, modified for patients who are participants in the environmental unit's research program and are able to reside outside of the unit. The unit might also assist some hospitals in making changes to one or two rooms so that patients diagnosed as environmentally hypersensitive would feel less concerned about being hospitalized when they become seriously ill and require emergency admission.

VIII - Inter-Disciplinary Dialogue

We have emphasized the need to develop approaches that minimize destructive debate and encourage constructive dialogue on the part of all those involved in this field. An interdisciplinary environmental unit, simply because it _is_ interdisciplinary, is an essential step in producing that dialogue. In attempting to find other ways of speeding this process of useful discussion, we make the following recommendations:

> **Recommendation 28:** That, in the near future, an interdisciplinary conference be held to discuss this report and its recommendations and that conferences of this type should be held regularly as part of the environmental unit's vital educational role.

> **Recommendation 29:** That the Ontario Medical Association consider establishing an environmental health subsection to bring together practitioners interested in this field.

"Medical education gives the career of many innovations an early and influential boost and creates a formidable impediment to the removal of those that eventually prove worthless or dangerous. All professionals are reluctant to alter practices that they have been taught. Innovations gain added legitimacy once they find their way into the medical curriculum and receive endorsement from influential educators and distinguished medical institutions". (McKinlay, 1981) That being so, it is important to introduce teaching programs that make students aware of the growing importance of the environment in the diagnosis of illness and, at the same time, ensure that the present, uncertain "state of the art" is accurately described.

> **Recommendation 30:** The Committee recommends that the environmental unit develop recommendations for curriculum review committees regarding possible curriculum changes in medical schools to ensure that issues relating to environmental illness are part of medical education.

Environmental hypersensitivity involves some key human issues: the fragility of the global environment, the fragility of the personal environment of some particularly vulnerable human beings and, in the possible interplay of psyche and soma, the delicacy of each person's inner environment. It highlights both the possibilities of science and its limitations. The Committee trusts that the Ministry will find the discussion and recommendations contained in this report to be of use as it deals with this complex matter.

References - Chapter Eight

1. Alexander, J.C. Department of Nutrition, University of Guelph. Personal communication. June 6, 1985

2. Beasley, J.D. The Impact of Nutrition on the Health of Americans: Introduction to A Report to the Ford Foundation. The Medicine and Nutrition Project, July 1981.

3. Braunwald, E. "Coronary Artery Surgery at the Crossroads". In New England Journal of Medicine, 1977; 276:661-663.

4. Draper, H.H. Chairman, Department of Biological Science, Department of Nutrition, University of Guelph. Personal communication, April, 1985.

5. Drea, Frank. Former Minister of Community and Social Services, Government of Ontario. Letter to Elie W. Martel, MPP, Sudbury East, December 20, 1984.

6. "DSM III-Diagnostic Criteria of Mental Disorders". In Diagnostic and Statistical Manual, No. 3. Washington, D.C.: American Psychiatric Association.

7. Gibson, B.L. Consultant to the Teaching Health Unit and in Occupational and Environmental Health, Department of Health, City of Toronto. Personal comunication, May, 1985.

8. Jackson, R. Issues in Preventive Health Care. Science Council of Canada, July, 1985.

9. Jewett, D. L. Associate professor, special studies unit, Department of Orthopaedic Surgery, University of California, San Francisco. Personal communication, May 3, 1985.

10. "Report of the Joint Committee of the Royal College of Physicians and the British Nutrition Foundation" In Journal of the Royal College of Physicians, 1984; 18:83-123.

11. Issenman, R. M.; Slack, M.A.; MacDonald, L.; and Taylor, W. "Children's Multiple Vitamins: Overuse Leads to Overdose". In The Journal of the Canadian Medical Association, 1985; 132: 781-784.

12. Lipowski, Z. J. "Psychosomatic Medicine in the Seventies, An Overview". In American Journal of Psychiatry, 1977; 134: 233-244.

13. Lowry, F. H. "Management of the Persistent Somatizer". In *International Journal of Psychiatry in Medicine*, 1975; 6(1/2): 227-239:

14. McKinlay, J.B. "From 'Promising Report' to 'Standard Procedure': Seven Stages in the Career of a Medical Innovation". Milbank Memorial Fund Quarterly/*Health and Society*, 1981; 59: 374-411.

15. Moore, J.; Phipps, K.; and Marcer, D. "Why do People Seek Treatment by Alternative Medicine?" In *British Medical Journal*, 1985. 290: 28-29.

16. Moss, C. Ontario Medical Association. Personal communication, July, 1985.

17. Wilkins, K.C. and Hoey, J.R. "Who Should Promote Health and Provide Preventive Care?" In *Journal of the Canadian Medical Association*, 1985; 132: 903-905.

18. Zlotkin, S. H. Division of clinical nutrition at the Hospital For Sick Children and assistant professor in the Department of Nutritional Sciences, the University of Toronto. Personal Communication, 1985.

APPENDICES

REPORT OF THE AD HOC COMMITTEE ON ENVIRONMENTAL HYPERSENSITIVITY DISORDERS

AUGUST, 1985

Although permission has been received from the authors for public release of the submissions in Appendices 5,6 and 7, elements of identification have been deleted to preserve as much confidentiality as possible.

APPENDICES

1. Letter from Mr. K. Norton to Judge G. M. Thomson, November 20, 1984.
2. Letter from a British physician re: cost-effectiveness of clinical ecology.
3. Summary of submissions received by the Committee.
4. Analysis of patient submissions.
5. Sample submissions from severely ill patients.
6. Examples of costs of tests and treatments as outlined by patients.
7. Sample letter from the parents of children with environmental hypersensitivity.
8. Summary of recommendations received from submissions.
   a) from patients, relatives and other interested persons
   b) from patient organizations:
      - Parents of the Environmentally Sensitive
      - The Human Ecology Foundation of Canada
      - Allergy Information Association
   c) The Canadian Society for Clinical Ecology and Environmental Medicine.
9. Sample - Rotary Diversified Diet
10. Questionnaire for patients attending an environmental control unit.
11. Alternative therapies reported by patients.
12. Position Statements of:
    a) The American Academy of Allergy and Immunology
    b) American Academy of Environmental Medicine
13. The conclusions and recommendations of the Joint Report of The Royal College of Physicians and the British Nutrition Foundation.
14. A Framework for Preventive Action, Chapter 7, Issues in Preventive Health Care. Ray Jackson, May, 1985.
15. a) Labelling proposal of the Joint Report of the Royal College of Physicians and the British Nutrition Foundation.
    b) Labelling proposal - presented to the Committee in Ottawa.
16. Recommendations from researchers in the field of environmental illness.

APPENDIX 1

Ontario

Office of the
Minister
Bureau du
Ministre

Ministry
of
Health

Ministère
de
la Santé

Hepburn Block
Queen's Park
Toronto, Ontario
M7A 2C4
416/965-2421

Edifice Hepburn
Queen's Park
Toronto, Ontario
M7A 2C4
416/965-2421

November 20, 1984

NOV [illegible]

Judge George Thomson
Provincial Court
Family Division
311 Jarvis Street
Toronto, Ontario
M5B 2C4

Dear ~~Judge Thomson:~~ George:

I would like to thank you for agreeing to undertake the Chairmanship of the Adhoc Committee on Environmental Hypersensitivity Disorders. I have great confidence that you will provide the necessary leadership to ensure that this Committee's mandate is carried out effectively.

I understand that you have already met with Dr. Boyd Suttie and Ms. Gina Brannan to discuss the Committee's terms of reference and membership. All Committee travel expenses will be paid for by the Ministry of Health and I would suggest you contact Dr. Suttie to discuss secretarial support and other arrangements.

Many thanks for accepting this vital and timely task and I look forward to receiving your report.

Yours truly,

Keith

Keith C. Norton
Minister
M.P.P. Kingston
and the Islands

June 6/85

APPENDIX 2

Dr. Hugh J. E. Cox
The Clinic
46 St. Mary Street
High Wycombe
Buckinghamshire HP11 2HE
Telephone High Wycombe (0494) 31814

HJEC/SC

23rd April 1985

Judge George Thomson,
10th Floor,
Hepburn Block,
The Ministry of Health,
Queens Park,
Toronto,
Ontario,
Canada.

Dear Judge Thomson,

I have been asked to write to you by a medical colleague, Dr William Van Hoogenhuize of Niagara Falls, 6150 Valley Way, L2E 1Y3.

Over the last ten years or so, I have increasingly practiced ecological medicine and this has meant a revolution in relation to identifying the cause of disease and the treatment of ill health in my practice. From becoming a high prescriber of drugs it became apparent to me that the more drugs I prescribed the more frequently I saw the patients and moreover they didn't appear to be getting better. When I started looking at nutrition and look and their food and chemical intolerances, instead of papering over the cracks, or using the touch-up paint, I was able to find out what was causing the problem and, in many instances, eliminate it leading to a resolution of the patient's problems. This has led to a marked reduction in the morbidity of the patients in my National Health Service practice, a reduction in consultation rates inside my NHS practice and a marked reduction in the cost to the state in prescribing. I did get the Ministry of Health to monitor my prescribing and the costs and I presented this data in a paper I gave at The Royal Society of Medicine last December. I am enclosing a copy of this paper which I think might be of some interest to you and may be of some help in relation to this matter of clinical ecology and its practice in Canada.

As you know we are paid in this country by the NHS on a capitation system. That means that we are given a flat rate, whether we see the patient once a year, a hundred times a year, or five hundred times a year. The same amount has to cover whether they are seen at the office or seen in their own homes. We do not get paid additional sums of money for visiting them or for doing any tests in their homes. So it is really up to us, as far as I can see, to reduce the consulting rate and to reduce the home visiting rate by keeping the patients well. It is said that in Chinese medicine the doctor is only paid when the patients remain well and not when they are ill. I am trying to work toward that goal myself. By having a reduced work load inside the NHS this is freeing me for more time to give to private patients. The numbers that I am actually quoting in the paper that I have given are entirely devoted to the NHS. It is quite clear to me and my staff and to the doctors to whom I addressed the paper and who subsequently asked me many questions, that this form of medicine can bring great saving to the state, a marked improvement in health of patients and a more rewarding form of medicine to the doctor.

Thank you for allowing me to write to you on this matter. I hope that the information might be helpful to you.

Yours very sincerely,

Dr Hugh J E Cox

Bill Rea, Joe Miller, Ted Randolph, Phyllis Saifer, Orion Truss and others who have taught me so much about this most rewarding area of clinical medicine. I am now convinced that a very high proportion of ill health in out patient clinical medicine is due to food, chemical and inhalent intolerance and susceptibility, to chronic hyperventilation, and to mycotoxins and in particular canditoxin.

One of my medical students attending the Clinic, but also who I had arranged to visit other practitioners, noted that whereas other Doctors wrote many prescriptions per session I myself wrote one or two, and then for a homeopathic medicine and more likely vitamins and minerals. It was the dwindling consultation rate and number of prescriptions that caused me to contact my bete noir - Dr. Brown the RMO - who I traced to the Ministry of Health at the Elephant and Castle. He kindly surveyed my prescriptions over a 10 year period, 1973-1983.

SLIDE 3.

Comparative data of No. of prescriptions, average cost of prescription and average cost per person on the NHS list between Cox practice and Buckinghamshire.

Between 1973 and 1983. (Percentages)

	Average No. prescriptions	*Average cost per prescription*	*Averagecost per person*
1973	*+21*	*+22*	*+48*
1975	*+15*	*+27*	*+45*
1977	*+15*	*+9*	*+125*
1978	*-15*	*-3*	*-17*
1980	*-35*	*+22*	*-21*
1982	*-35*	*+7*	*-30*
1983	*-31*	*+6*	*-26*

This slide shows the comparative data of the number of prescriptions and average cost per prescription with data for the average of Buckinghamshire. You will see that the average No. of prescriptions has fallen from some 21% above to 31% below. Although the average cost per prescription is above, but nevertheless has fallen, the average cost per person on the list has fallen from some 50% above to 26% below.

Some comparison with Buckinghamshire and the rest of England are presented in the next slide.

SLIDE 4.

Data on prescribing for NHS patients in The Clinic, 46 St. Mary Street, High Wycombe, compared with the rest of Buckinghamshire, and the rest of England.

February 1983.

Average No. of prescriptions per person.

Clinic	*0.296*
Bucks	*0.425*
England	*0.539*

The average number of prescriptions per person is some 55% of the rest of England and 69% of Buckinghamshire. (I have recently been informed it has fallen to some 25% of the rest of England this year. 1983-1984)

The next slide shows that although the net cost per prescription is higher, the average net cost per person on NHS list is 64% of rest of England and 74% of rest of Buckinghamshire.

SLIDE 5.

	Average net cost per prescription pounds sterling (1983)	*Average net cost per person on NHS List (1983)*
Cox	*3.87*	*1.15*
Bucks	*3.64*	*1.55*
England	*3.28*	*1.77*

CLINICAL ECOLOGY - COST EFFECTIVE
A CAMEO PRESENTATION

Perhaps I should say the beginning that I am a single handed medical practitioner working in a family practice of about 2500 patients.

After some 9 years in Hospital practice I spent another eight in the pharmaceutical industry when I travelled the world with increasing frequency and speed and learning the intricacies of pharmacological manipulation before entering the community as a practical clinical practitioner. It was then perhaps not unnatural that I should believe in the omnipotence of the drug. I had a fairly well organised practice with a small laboratory so that I could do haemoglobins, blood sugar etc. I had an ECG machine, peak flow meter and Vitalograph, in addition to my stethoscope - so believed I could treat virtually all my patients apart from surgical problems at home.(I subsequently fitted out a small theatre for minor surgical proceedures.) So I prescribed the latest and most expensive drugs to more and more patients, and although my patients didn't go into hospital, they certainly came back to visit me very frequently and often called me to visit them. Indeed the frequency of my prescribing drugs was indeed matched by the frequency of return visits and an increased frequency of visiting by the Regional Medical Officer who was for ever pointing out the number of my prescriptions and the cost which was far above the average. I tried to explain that I saved the cost of hospital beds etc. and that therefore my expensive habits were justified. I am not sure that he believed me.

It has been reported that the incidence of latrogenic disease in patients admitted to hospital can be as high as 30%. I believe the incidence in the field outside hosptial practice may be very much higher.

About 1974-75 I began reading about Burkitts work and that of Cleave, Trowell and many others on the effects of nutrition and disease, and began to apply their methods. I became aware of foods and their possible role in triggering off migraine. The fire that was beginning to burn was further fuelled by attending a 3 day conference organised by the McCarrison Society in 1977 at Oxford, when I met someone called Richard MacKarness. As a result of the meeting and discussion with Doris Grant I produced a 'Diet for Health' - available for all my patients - eliminating junk foods, sugars, tea and coffee, and reducing the intake of milk products. Around that time I began using homeopathy after attending a number of courses at the Royal Homeopathic Hospital in London. So instead of drugs, a diet was used, supported if necessary by homeopathy. Of course I still used allopathic drugs, but on a very much reduced scale. This led to a marked fall in consultation visits per clinic.

SLIDE 1

Average consultations per Clinic (NHS).

1973-1976	*16 - 25*
1977-1980	*12 - 18*
1980-1984	*6 - 10*

During this period the NHS practice has increased by more than 100%.

After an intial visit to Basingstoke I spent some time with John Mansfield. I had of course read Richard MacKarness book 'Not all in the mind' and began to apply more formal elimination diets. Then I began reading Rinkel, Dickey, Randolph, Gerrard etc. The seed had been sown, had germinated, and was beginning to bear fruit. The practice had doubled but the frequency of consultations was dwindling - patients weren't getting sick so frequently. Following themeeting at the RCP in 1979 with the American Society of Clinical Ecology, the British Clinical Ecology Group was formed, and I am proud to have been a founder member of those original sixteen. The development took place like this.

SLIDE 2.

Facilities offered to NHS patients over the past 10 years.

1975 onwards	*Nutritional advice, dietary, manipulation.*
1977	*Homeopathy*
1978	*Acupuncture, Elimination diets challenge and osteopathy.*
1979	*Founder member of Clincial Ecology Group. Did not accept new patients who smoked.*
1980	*(Skin provocation testing and desensitisation.)*
1982	*Identification of food, chemical and inhalent allergens using applied kinesiology.*

Over the time I prescribed less and less drugs, and banned smoking as far as I could, used homeopathy, manipulation and acupuncture, but more and more I applied myself to practising environmental medicine, and I must thank many members of this society particularly Richard MacKarness, John Mansfield, Michael Radcliffe, Ronnie Finn and my colleagues in the USA,

SLIDE 6
Net ingredient cost in pounds per 1000 patients.

	Practice	*FPC (Bucks)*	*% Diff.*
Nervous system	*137*	*164*	*-16*
Gastro intestinal system	*67*	*114*	*-41*
Cardiovascular	*286*	*314*	*-28*
Respiratory	*75*	*140*	*-65*
Anti Rheumatics	*78*	*160*	*-82*
Anti Infectives	*181*	*185*	*-2*
Hormones	*81*	*126*	*-36*
Blood - Nutrition	*85*	*20*	*+325*
Malignancy	*0*	*7*	*-*
Allergic Reactions	*20*	*40*	*-50*
Skin and mucous membranes	*56*	*111*	*-50*
Dressings and appliances	*51*	*126*	*-75*

In a comparison with Buckinghamsire of the net ingredient cost, only the nutritional cost is higher and that is much higher. This refers mainly to vitamins and minerals etc. Even the prescription cost for allergic reactions is very much less.
An analysis and comparison of the number of items prescribed has also been made and is shown in the next slide.
SLIDE 7.
Number of items prescribed per 1000 patients.

	Practice	*FPC (Bucks)*	*% Diff.*
Nervous system	*45*	*75*	*-40*
Gastro intestinal system	*12*	*24*	*-50*
Cardiovascular	*50*	*59*	*-15*
Respiratory	*15*	*48*	*-33*
Anti Rheumatics	*10*	*24*	*-50*
Anti Infectives	*41*	*61*	*-33*
Hormones	*30*	*24*	*+25*
Blood - Nutrition	*32*	*14*	*+129*
Malignancy	*0*	*0*	*0*
Allergic Reactions	*5*	*9*	*-44*
Skin and Mucous membranes	*26*	*55*	*-53*
Dressings and appliances	*11*	*9*	*+22*

Howell Brown wrote to me six months ago and I reproduce part of his letter.
SLIDE 8.
Extract of letter from the Department of Health and Social Security, - April 1984.

'Within the Oxford Region, which is one of the lowest cost prescribing regions is England, Buckinghamshire issued the lowest number of prescriptions per person on the NHS prescribing lists, and the average total cost per person on the list was also the lowest.......
You can thus see that if you (Cox) have low figures yourself in a low area and region cost wise, then you must be amongst the lowest prescribers in England.'

According to Brown my prescribing costs are still falling and I am told I could get them much lower, by not prescribing vitamins and minerals. I am not sure what he will say about my prescribing Nystatin, which is increasing enormously throughout the practice. On costing I understand that I am saving the Department of Health a minimum of £80000 per year, accompanied by a reduction in morbidity, and consequently less absenteeism from school and work. If the principle that I have applied and which members of this Society apply, could be practised throughout the country, and in and out of Hospital, the savings must be quite enormous.
Some say what cost - Health.
I say, What saving - Health.
I believe I can say that Clinical Ecology is cost effective in the NHS.

APPENDIX 3

Summary of Submissions Received by the Committee on Environmental Hypersensitivity Disorders

Ontario	
Individual patient submissions	614
Submissions received from 1 patient	220
Submissions relating to the make-up of the Committee	232
Outside Ontario	
Out-of-province patient submissions	38
United States patient submissions	35
United States medical practitioners	45
Other	
Canadian medical practitioners	25
Total	1,209

APPENDIX 4

Analysis of Patient Submissions

It was not possible for an individual to develop an overview of the patients concerns, other than subjectively, because of the large number of submissions (614) received, and the enormous amount of detail contained in them, and also because impressions could be strongly influenced by a particular letter at a given point in time. In an attempt to support the overall impressions gained from reviewing these submissions, a sample[1] of 147 submissions (23.9%) was evaluated in the following way. Each submission was read and key ideas or topics were coded for tabulation. These topics were categorized under the following general areas:

- demographic data
- allergens
- tests
- financial
- number of doctors seen
- symptoms
- treatments
- recommendations

Information was also noted with regard to areas that were reported by patients to be particularly helpful or not helpful.

Because the evaluation was not the result of a uniform questionnaire or interview process, the tabulation was limited to a simple counting of the information reported, and no attempt was made to interpret the results. However, in general terms, the information gathered from this analysis does support the overview of the patients submissions and visits with patients as outlined in chapter 5.

A sample of the coding form and the results of the tabulation are attached.

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[1] The sample was taken by choosing a file from an alphabetically labelled file system. During the coding process, 10 to 20 letters were out of the files for response at any given time and thus were not available for sampling. Letters received after April 22, 1985 were not included in the sample.

APPENDIX 4

Summary of Information Reported in 147 Submissions:

1. Source of submission - Self - 134
Parent - 50
Relative - 5
Friend - 2
191 Patients

2. Average number of medical practitioners seen - 6

3. Average number of years ill (51 reported) - 12

4. Allergic as a child - 59

5. Financial burden reported - 73

6. Average yearly cost (18 reported) - $4,463

7. Distribution by sex - Male - 57
Female - 134

8. Other Information Reported
   - Distribution by age (96 reported)
   - Good Report - Items reported as most helpful
   - Diagnostic Tests Received
   - Treatments Received
   - Symptoms Reported
   - Allergens Reported
   - Occupations Reported
   - Health Practitioners Reported by Patients
   - Onset Causes Reported
   - Recommendations Reported

SUMMARY

PATIENT STUDY DETAIL REPORT
04/25/85

	SOURCES							SEX		STATUS			NUM	YRS	CHLD	YRS	DISABILITY				ENCL	YEARLY	NUM
FILE	S	P	R	F	T	I	AGE	MALE	FMAL	MARR	SING	OTH	CHLD	EDU	ALER	ILL	0	1	2	3	BRON	COST	DOCT
Total reported =							96						26	32		51						18	7
Total subjects = 191																							
Total	134	50	5	2	0	0	3223	37	134	61	22	1	69	481	59	627	15	0	29	18	73	80333	42
Aver.							34						2.7	15		12						4463	
Max.							80						6	20		58						12378	1
Min.							2						1	3		2						400	

	Male	Female	
1-10	10	8	**18**
11-20	11	6	**17**
21-30	3	9	**12**
31-40	2	9	**11**
41-50	1	10	**11**
51-60	1	15	**16**
61-70	4	3	**7**
71+	1	3	**4**
	33	**63**	**96** (Reported Age)

Disability - 18 - Unable to Work
29 - Some Work Loss
15 - Cured

GOOD REPORT
04/25/85

CODE	DESC	COUNT
P01	CLINICAL ECOLOGIST	76
T37	DESENSITIZATION EXTRACTS	29
T04	DIETS ROTARY	11
T36	CLINICAL ECOLOGY	10
T03	CHANGES TO ENVIRONMENT	10
T25	SUB LINGUAL DROPS	8
D10	PROVOCATION TESTING	8
T01	AVOIDANCE	8
T53	DIET SPECIAL OTHER	5
T06	SERUM INJECTIONS	5
D06	SUBLINGUAL DROPS TEST	3
T13	MOVE RESIDENCE	3
T48	HYPOGLYCEMIA DIET	2
T05	SUBLINGUAL ADMIN OF EXTRACTS	2
P08	CHIROPRACTOR	2
T08	ORTHOMOLECULAR THERAPY	2
P10	GENERAL PRACTITIONER M D	2
T18	MINERAL SUPPLEMENTS	2
T35	OXYGEN	2
P03	ACUPUNCTURIST	2
T47	TRANQUILIZERS	2
F07	FAMILY	1
T19	INTAL	1
X09	RECOGNITION OF CLINICAL ECOLGY	1
T42	TOOTH FILLINGS REMOVED	1
T52	PALLINEX INJECTIONS	1
P29	HOLISTIC DOCTOR	1
P02	ALLERGIST	1
P32	IRIDOLOGIST	1
P34	ONCOLOGY	1
T55	ACUPUNCTURE	1
D07	CYTOTOXIC TESTS FOOD ALLERGY	1
T15	WATER PURE	1
T16	ISOLATION	1
P07	KINESIOLIGIST BEHAVIOURAL	1
T14	DIET ORGANIC	1
Summary for REPORT:		
Total		209

Note: These are the items that patients reported as being particularly helpful. We did not continue to code for Avoidance as it was part of almost every submission of any substance - hence it should considered at the top.

Diagnostic Tests Reported by Patients

D00.DIAGNOSTIC TESTS
D01.SCRATCH TEST
D02,X RAY
D03,ULTRASOUND
D04,HISTORY COMPREHENSIVE
D05,INTRADERMAL ADMIN OF EXTRACTS
D06.SUBLINGUAL DROPS TEST
D07,CYTOTOXIC TESTS FOOD ALLERGY
D08.RAST TEST
D09.B AND T CELL MEASURMENT
D10,PROVOCATION TESTING
D11.SERIAL DILUTION TITRATION
D12.FASTING
D13.BLOOD TESTS
D14.MONONUCLEOSIS TEST
D15,HEPATITIS TEST
D16.LUKEMIA TEST
D17,ANEMIA TEST
D18,GALL BLADDER DISEASE TEST
D19,ULCER TEST
D20,THYROID TEST
D21,URINANALYSIS
D22.BOWEL DISEASE TEST
D23.SURGERY EXPLORATORY
D24.BRAIN SCAN CAT
D25,BODY SCAN
D26,PULSE TESTS
D27.ECG
D28,LUNG TESTS
D29,HAIR ANALYSIS
D31,PSYCHOMETRIC TESTING
D32,BONE MARROW TEST
D33.GLUCOSE TOLERANCE TEST
D34,DIET ANALYSIS

Treatments and Therapies Reported by Patients

T00.TREATMENTS AND THERAPIES
T01.AVOIDANCE
T02.NEUTRALIZATION
T03.AIR CLEANERS INSTALLED
T03.CHANGES TO ENVIRONMENT
T03.HEATING SYSTEM CHANGES
T04.DIETS ROTARY
T05,DRUGS ANTIBIOTICS
T05.SUBLINGUAL ADMIN OF EXTRACTS
T06.SERUM INJECTIONS
T07.COLONIC IRRIGATION
T08.ORTHOMOLECULLAR THERAPY
T09.MASSAGE
T10.PSYCHOTHERAPY
T11.PSYCHOANALYSIS
T12.CHARCOAL MASK FILTER
T12.FACE MASK FILTER
T13.MOVE RESIDENCE
T14.DIET ORGANIC
T15.WATER PURE
T16.ISOLATION
T17.PRAYER FAITH HEALING
T18.MINERAL SUPPLEMENTS
T18.VITAMIN SUPPLIMENTS
T19.INTAL
T20.LAXATIVES
T21.MEDITATION
T22.CHIROPRACTIC
T24,VAGINAL CREAMS
T25,SUB LINGUAL DROPS
T26.MAGNETO PULSE
T27.NASAL SPRAY
T28,ADRENALIN
T28.ADRENALINE SHOTS
T29.INHALERS
T29,ANTIHISTIMINE
T30,CAUTERIZE NASAL LININGS
T31,SELF HELP LITERATURE
T32,ENZYMES DIGESTIVE
T34,HYPNOSIS
T35,OXYGEN
T36,CLINICAL ECOLOGY
T37.DESENSITIZATION EXTRACTS
T38.IRIDOLOGY
T39,MYCOSTATIN SUPPOSITORIES
T42.TOOTH FILLINGS REMOVED
T43,PLANT PHENOLICS PROGRAM
T44,EXERCISE
T45,WORK HOURS REDUCTION
T46.SLEEP TIME INCEASED
T47,ANTIDEPRESSANTS TRANQUILIZERS
T47.TRANQUILIZERS
T48,HYPOGLYCEMIA DIET
T50,STEROID CREAMS
T50.CORTIZONE
T50.STEROIDS
T51.RESPIRATOR
T52.PALLINEX INJECTIONS
T53.DIET SPECIAL OTHER
T54.BIOFEEDBACK
T55.ACUPUNCTURE
T56.SUN LIGHT
T57.PHENOLICS DESENSITISATION
T58,VEGA TEST
T59,SHOCK THERAPY
T60.PHSIOTHERAPY
T61.SURGERY
T62.ENVIRONMENT CHANGE EXTREEM

C.N.S. Symptoms Reported by Patients

N00,CENTRAL NERVOUS SYSTEM
N01,HEADACHE
N02,DEPRESSION
N03,EXHAUSTION
N04,FATIGUE
N05,WEAKNESS
N06,INSOMNIA
N07,HYPERACTIVITY
N08,CONCENTRATION POOR ADULTS
N09,MEMORY LOSS SHORT TERM
N10,DIZZINESS
N11,FAINTING
N12,ANAPHYLAXIS SHOCK
N13,ANXIETY
N14,IRRITABILITY
N15,ELATION
N16,DROWSINESS
N17,SPEECH SLURRED
N18,MULTIPLE SCLEROSIS
N19,INEBRIATED
N20,COORDINATION LOSS
N21,NIGHTMARES
N22,SEISURES
N22,CONVULSIONS
N23,CONFUSION
N24,NERVOUS
N25,HALLUCINATIONS
N26,NUMBNESS IN EXTREMITIES
N27,HYSTERIA
N28,SUICIDE
N29,VERTIGO
N30,CRYING SPELLS
N31,AMIOTROPIC LATERAL SCLEROSIS
N32,EMOTIONAL CHANGES
N33,LEARNING DISABILITIES
N34,PERSONALITY CHANGES
N35,STRESS LOW TOLERANCE
N37,OEDEMA
N38,BRAIN FUNCTION IMPAIRED
N39,SHAKING TREMORS
N40,AGGRESSION BEHAVIOURAL PROBLEM
N41,THYROID CYST
N42,ATTENTION DEFICIT SYNDROME
N43,NEUROTIC
N44,SOMATIZATION SYNDROME

Gastrointestinal Symptoms Reported By Patients

I00.GASTROINTESTINAL
I01.COLIC
I02.COELIAC
I03.BOWEL IRRITATION
I04.ABDOMINAL PAIN
I04.CRAMPS
I05.NAUSEA
I06.DIARRHEA
I07.BLOATING SWELLING
I08.CONSTIPATION
I09.VOMITING
I10.CRAVINGS FOOD
I10.HUNGER ABNORMAL
I11.THIRST ABNORMAL
I12.CANKER SORES
I13.INDIGESTION
I14.WEIGHT LOSS
I15.WEIGHT GAIN
I16.ULCERS
I17.TEETH SENSITIVITY
I18.GALL STONES
I18.GALL BLADDER SWOLLEN
I19.LIVER SWOLLEN
I21.VOMITING BLOOD
I22.BLOOD IN STOOL
I23.FOOD UNDIGESTED
I25.COLITIS
I25.NERVOUS STOMACH
I25.ANAREXIA

Respiratory Symptoms Reported

R00.RESPIRATORY
R01,WHEEZING
R02,ASTHMA
R03,HAYFEVER
R05,BRONCHITIS
R06.COUGH
R06.LUNG CONGESTION
R07,CHEST PAIN
R08,SHORTNESS OF BREATH
R09,PNEUMONIA
R10,PLEURISY
R11,COLDS

Musculo-Skeletal Symptoms Reported

M00,MUSCULO SKELETAL
M01,ARTHRITIS RHEUMATISM
M02.JOINT PAIN
M03,MUSCLE PAIN
M04.BONE PAIN
M05,WEAKNESS MUSCULAR
M06,BACK ACHE
M07,SWOLLEN LIMBS

Genito-Urinary Tract Symptoms Reported by Patients

G00,GENITO URINARY TRACT
G01,ENURESIS
G01,BED WETTING
G02,CANDIDA
G02,YEAST INFECTION
G04,URINATION PAINFUL
G05,BLOOD IN URINE
G06.MENSTRUAL BLEEDING HEAVY
G06,MENSTRUAL PAIN EXCESSIVE
G07,VAGINAL ITCHING
G08,VAGINAL SORES
G09.BREASTS PAINFULL ENLARGED
G10,MENSTRUAL CYCLE IRREGULAR
G11,VAGINITIS
G12.PRE MENSTRUAL SYNDROME PMS
G15,BLADDER INFECTION

Eye, Ear, Nose & Throat Symptoms

```
E00,EYE EAR NOSE THROAT
E01,EAR ACHES
E01,EAR INFECTIONS
E02,THROAT PAIN
E03.SWOLLEN GLANDS
E04.CONJUNCTIVITIS
E05,EYES WEEPING
E06.EYES SWOLLEN
E07,NASAL STUFFYNESS
E08,SNEEZING
E09,CATARRH
E09,RUNNY NOSE
E10,RINGING IN EARS
E11.DEAFNESS INTERMITTENT
E11,HEARING LOSS
E12,DIZZINESS EAR ASSOCIATED
E13.VISION BLURRING
E14.EYE IRRITATIONS
E14.EYE FLICKERING
E15.SINUS INFECTION
E16,RHINITIS
E17.VISION LOSS
E18,EAR DISCHARGE
E20,NASAL INFECTION
E21,SINUS CONGESTION
E22,VOICE LOSS
E23,THROAT HOARSENESS
E24,MOUTH DRY
E25.TASTE CHEMICAL
E26.NOSE BLEEDING
E27,THROAT SHAKING
E28.NUMBNESS IN JAW CHEEK
E29,EYES RED
E30,EYES HEAVY
E31.SENSES REDUCED TASTE AND SMELL
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Skin Symptoms Reported by Patients

S00.SKIN
S01,ECZEMA
S02.URTICARIA
S03.DERMATITIS
S04.HIVES
S05.RASHES BLOTCHING OF SKIN
S06.BRUISING
S07.FLUSHING
S08,ITCHING
S10.BLISTERS
S11.BURNING
S12,LUPUS
S13,PERSPIRATION
S14,SKIN INFECTIONS
S15,BOILS
S16.PSORIASIS

Cardiovascular Symptoms Reported by Patients

C00.CARDIOVASCULAR
C01,MIGRANE
C02,HYPERTENSION
C03,CARDIA RHYTHM DISTURBANCES
C04,SPASM
C05,CIRCULATION IRREGULARITIES
C06,TACHYCARDIA
C07,VASCULITIS
C08,PALLOR
C09,HYPOGLYCEMIA
C10,MONONUCLEOSIS
C11,HEPATITIS

Allergens Reported

A00.ALLERGENS CAUSES
A01.AEROSOLS
A02.AIR DEODORIZERS SPRAYS
A03,ALUMINUM
A04,AMMONIA
A05.BLEACHES
A06,CAR EXHAUST
A06.DIESAL EXHAUST
A07,CEDAR
A08.CHARCOAL
A09,CHLORINATED WATER
A09,CHLORINE
A10,CHRISTMAS TREES
A11,COSMETICS
A12,DEODORANTS ANTIPERSPIRANTS
A13.DETERGENTS
A14,DISINFECTANTS
A15.DYES
A16,ELECTRIC BLANKETS
A17,FELT TIP PENS
A18.FLAMEPROOFING
A19,FLOOR CLEANERS WAXES
A20,FOOD ADDITIVES
A20.COLOURING FOOD
A20,PRESERVATIVES FOOD
A21.FLUORIDATED WATER
A22,FORMALDEHYDE
A23,FUNGICIDE
A24,FURNITURE POLISH
A25,GAS APPLIANCES
A26,HAIR SPRAY
A27,PLASTIC PACKAGES
A28,INSECTICIDE NO PEST STRIPS
A29,KEROSENE
A30,LACQUER
A31,MEDICATIONS
A32,MINERAL OIL
A33,MOTH BALLS CRYSTALS
A33,MOTHPROOFED PAPER
A35,MOUTHWASH
A36,NAIL POLISH
A38,OIL LUBRICATING
A39,OVEN CLEANER
A40,PAINT FUMES
A41,PARAFFIN
A42.PERFUMES AFTERSHAVE
A43.PERMANENT PRESS CLOTHING
A44,PESTICIDES
A45,FABRIC SYNTHETIC
A46.PINE SCENTED CLEANERS
A47,PLASTICS SHEETS FILMS
A48,REFRIGERANT GAS
A49,RUBBER BACKED CARPETS
A49.PILLOWS RUBBER
A50,RUBBING ALCOHOL

Allergens Reported (2)

A51,SCENTED SOAPS
A52.SHAMPOO
A53,SOLVENTS FOR COPIERS
A54,SMOKE
A54.TOBACCO SMOKE
A55,SPONGE RUBBER
A56.STAINPROOFING MATERIALS
A57.TEFLON
A58.PHENOL
A60,TOOTHPASTE
A61,TURPENTINE
A62,VARNISH
A62,GLUES
A62,EPOXY
A63,VARSOL
A64,CLEANERS
A65,APPLIANCES TV RADIO TELEPH ETC
A66.STORES
A67,FABRIC
A68,COTTON
A69,MOULD
A69,POLLEN
A69,RAGWEED
A69.ANIMAL HAIR
A69,WEEDS
A69,DUST
A69,GRASS
A72,PROPANE
A73.NOISE
A74,LIGHT
A75,ACRYLIC
A76,PORK
A78,SALT
A78.MONOSODIUMGLUTIMATE MSG
A81,FEATHERS
A83,GLISERINE
A84,COCONUT
A86,WHEAT
A89,ALCOHOL
A90,MILK
A91,EGGS
A92,YEAST
A93,ORANGES
A94,BEEF
A95,MITES INSECTS
A96,FRUIT
A96,BANANAS
A96,APPLES
A98,GASOLINE
A99,BACTERIA
B01,CARPETS
B02,INDUSTRIAL WASTE FUMES
B04,LOTION SKIN
B04,PABA LOTIONS
B04,SUNSCREENS

Allergens Reported (3)

B05,HAIR PERMANENT SOLLUTION
B06,FOAM MATTRESSES
B07,WALLPAPER
B08,ICING
B09,CAFFEINE
B10,OIL HEAT
B11.SMELTS
B12,CHICKEN
B14,METALS
B17,PROGESTERONE
B17,ESTROGEN
B18,CHEMICALS
B19,STARCH
B20.PENICILLIN
B21.PETROCHEMICALS
B22,WORKPLACE AIR
B23,FOODS
B26,LAMB
B27,PEANUTS
B28,CHOCOLATE
B29,CHLORDANE
B30,PAPER
B31,INK
B31,NEWSPAPER INKS
B31,MAGAZINES HIGH GLOSS
B35,SUGARS
B35,CANE SUGAR
B37,VEGETABLES
B38,DRUGS FOR HAYFEVER
B39,BEE STINGS
B40,VINEGAR
B41,HEAT EXTREEM
B41,TEMPERATURE EXTREEMS
B41,COLD EXTREEM
B42,AIR
B43,FABRICS NAURAL
B44,SULPHITES

04/25/85 LIST OF PATIENT OCCUPATIONS **(Reported)**

ACCOUNTANT
BUS DRIVER
CHEF STUDENT
CHILD CARE WORKER
COMPUTER ROOM SUPERVISOR
COURT REPORTER
EARLY CHILDHOOD EDUCATOR
FAMILY COUNSELLOR
FARMER RETIRED
FOREIGN EXCHANGE OFFICER
HANDICAP WORKER
HOME SUPPORT WORKER
HOMEMAKER
HOUSEWIFE
HOUSEWIFE
HOUSEWIFE
HOUSEWIFE
INDUSTRIAL LAB TECHNICIAN
MEDICAL TECHNICIAN
NURSE
NURSE HOUSEWIFE
NURSE PUBLIC HEALTH
NURSE REGISTERED
NURSING DIRECTOR RETIRED
OFFICE WORKER
PHYSIOLOGY
PRINCIPAL RETIRED
PROFESSIONAL
PUBLIC HEALTH NURSE
REG NURSING ASSISTANT
RESOURCE TEACHER
RETIRED
RETIRED
SCHOOL TEACHER
SECRETARY
SOCIAL WORKER
SOCIAL WORKER TEACHER
STAFF RELATIONS FED GOVT
STUDENT
STUDENT
STUDENT
STUDENT
STUDENT
STUDENT
STUDENT
STUDENT
STUDENT
• TEACHER
• TEACHER
• TEACHER
• TEACHER
• TEACHER
• TEACHER
• TEACHER
• TEACHER OF HANDICAPPED
• TEACHER PHYS ED
J P
WEAVER

12 - Teaching
9 - Students
7 - Nursing
5 - Housewives

Note:

A large number of submissions complained about the amount of chemicals in the school environment.

Health Practitioners Reported by Patients

P00.PRACTITIONER TYPE
P01.CLINICAL ECOLOGIST
P02,ALLERGIST
P03.ACUPUNCTURIST
P04.NATUROPATH
P05.HOMEOPATH
P06.REFLEXOLIGIST
P07.KINESIOLIGIST BEHAVIOURAL
P08.CHIROPRACTOR
P09.PSYCHIATRIST
P10.GENERAL PRACTITIONER M D
P11,EAR NOSE THROAT SPECIALIST
P12,NEUROLOGIST
P13.INTERNIST
P14,ENDOCRONOLOGIST
P15,TROPICAL DISEASE SPECIALIST
P16,CARDIOLOGIST
P17.ORTHOPEDIC SPECIALIST
P18,NUTRITIONIST
P19,OSTEOPATH
P20.RHEUMOTOLOGIST
P21.HYPNOTHERAPIST
P22,VETERNARIAN
P23,DIETICIAN
P24.EYE DOCTOR
P25,DERMATOLOGIST
P26,PODIATRIST
P27,IMMUNOLOGIST
P28.DENTIST
P29,HOLISTIC DOCTOR
P30,GYNECOLOGIST
P31,METABOLIC SPECIALIST
P32,IRIDOLOGIST
P33,GASTROENTEROLOGIST
P34,ONCOLOGY
P34,HEOMATOLOGY
P35,LEARNING DISABILITIES EXPERT
P36,LUNG SPECIALIST
P37.PAEDIATRICIAN
P37,MASSEUSE

Onset Factors Reported by Patients

000,ONSET CAUSES
001,ALLERGIC REACTION CAUSE UNKNOW
002,FORMALDEHYDE EXPOSURE
003,MOVE TO CITY
004,CHLORDANE EXPOSURE
005,ROOT CANAL
006,WORKPLACE ENVIRONMENT
007,HOME HEATING METHOD
008,PHYSICAL INJURY
009,VIRAL INFECTION
010,FOOD POISONING
011,STRESS
011,BIRTHING
012,DRUG REACTION

Note - We did not start looking at this area until late in the coding.

Recommendations Reported

```
X00.RECOMENDATIONS PROPOSALS
X01,RESEARCH
X02.INGREDIENTS ON LABLES
X03.PURE FOODS EASILY AVAILABLE
X04.ADDITIVES IN FOOD CONTROLLED
X05,LOWER PRICES SPECIALTY FOODS
X06.TRAINING OF DOCTORS
X07,FINANCIAL ASSISTANCE
X08.CLINIC ENVIRONMENTAL SPECIALTY
X09.RECOGNITION OF CLINICAL ECOLGY
X10.DIETETIC ASSOC RESTRICTS FOODS
X11,RECOGNIZE TESTS OF CLIN ECOLGY
X12,RECOGNIZE THERAPIES OF CLN ECL
X13.WATER PURITY GUARANTEED
X14.GOVT CONTROL OF ALL GAS EMISNS
X15,NO SMOKING IN WORKPLACE
X16.PAINTING WHEN NO ONE PRESENT
X17,EMOTIONAL SUPPORT FOR ENV ILL
X18.FINANCIAL ASSIST ENVIRONMENT
X19.INFORMATION ON HAZARDOUS CHEM
X20,SCHOOLS FOR ENV SENS CHILDREN
X21.INFO EXCHANGE CL EC AND MDS
X22.OHIP RECOGNITION
X23.FINANCIAL ASSIST TRAVEL COSTS
X24,RECOGNITION OF DISABILITY
X25.STUDY REGIONAL PROBLEM AREAS
X26.GERIATRIC ECOL SAFE FACILITY
X27.GOVT CONTROL BUILDING MATERIAL
X28.GOVT CONTROL AIR QUAL INSIDE
X29,MAGNETO PULSE IN HOSPITALS
X30,MORE CLINICAL ECOLIGISTS
X31.DISABILITY PENSIONS
X32,MEDICAL SCHOOL TEACH ENVIR MED
X33,INCREASE TIME WITH THERAPISTS
X34,EARLIER TESTING
X35,INSURANCE COVERAGE
X38,NO SMOKING LEGISLATION
X40,PERFUME FREE AREAS
X41,GOVT COMPENSATION UREAFORMALD
X42,EXPENSES TAX DEDUCTIBLE
X43,HOSPITAL WITH CE UNIT
X44.ALLERGY TEST PSYCHIATRIC PATNT
X45.INSURANCE GUIDELINES FOR CE
X47.MEDICAL SCHOOLS INCREASE NUMBR
X48.FINANCIAL SUPPORT BY GOVT
X49.CHEMICALS CONTROL IF TOXIC
X50.MEDICATION FREE
X51.INFORMATION ON CE AVAILABLE
X52.PREVENTATIVE MEDICINE HOLISTIC
Z99.END OF LIST
~~.
```

CODING FORM

PATIENT RECORD

___________________ LAST NAME ______________ FIRST NAME

________________________ ADD1

________________________ ADD2 _ SOURCE CLASSIFICATION (S=SELF, P=PARENT, R=RELATIVE, F=FRIEND, T=THERAPIST, O=OTHER)

________________________ CITY

___ PROV ___ ___ POSTAL CODE

_____________ PHONE

__ AGE _ SEX (m/f) _ MARITAL STAT (1-mar. 2-sing. 3-oth) __ # Children

________________________ OCCUPATION _ (F-Full time, P-Part time, U-Unempl)

__ YEARS OF EDUCATION (8-PRIMARY, 12-HIGH SCH., 16-UNIVERSITY)

_ ALLERGIC AS CHILD (y/n) __ YEARS ILL.

_ DISABILITY (0-cured, 1-no work loss, 2-some work loss, 3-unable to work)

_ FINANCIAL BURDEN REPORTED (y/n) _________ COSTS PER YEAR

__ NUMBER OF DOCTORS (THERAPISTS) SEEN

Enter below codes of TREATMENTS, TESTS, THERAPISTS, AND FINANCIAL SOURCES that are especially emphasised.

___ ___ ___ ___ ___ ITEMS REPORTED TO BE PARTICULARLY HELPFUL

___ ___ ___ ___ ___ ITEMS REPORTED TO BE PARTICULARLY UNSATISFACTORY

ENTER BELOW CODES FOR SYMPTOMS, CAUSES, TREATMENTS, TESTS, THERAPISTS, FINANCIAL SOURCES, RECOMMENDATIONS, ETC.

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

___ ___ ___ ___ ___ ___ ___ ___ ___ ___

ALL REPORT
04/25/85

CODE	DESC	COUNT
P01	CLINICAL ECOLOGIST	106
A69	MOULD	91
B23	FOODS	75
T05	SUBLINGUAL ADMIN OF EXTRACTS	74
N01	HEADACHE	62
B18	CHEMICALS	60
P02	ALLERGIST	59
T37	DESENSITIZATION EXTRACTS	53
P10	GENERAL PRACTITIONER M D	45
A54	SMOKE	45
T03	CHANGES TO ENVIRONMENT	44
T01	AVOIDANCE	43
T04	DIETS ROTARY	38
T06	SERUM INJECTIONS	38
T18	MINERAL SUPPLEMENTS	38
N04	FATIGUE	38
X22	CHIP RECOGNITION	37
A42	PERFUMES AFTERSHAVE	36
D10	PROVOCATION TESTING	36
N02	DEPRESSION	32
A06	DIESAL EXHAUST	32
N10	DIZZINESS	32
I04	ABDOMINAL PAIN	30
I05	NAUSEA	30
A90	MILK	30
E02	THROAT PAIN	27
R02	ASTHMA	27
M02	JOINT PAIN	26
R08	SHORTNESS OF BREATH	25
E01	EAR ACHES	24
T29	ANTIHISTIMINE	23
A20	FOOD ADDITIVES	23
R06	LUNG CONGESTION	22
B31	INK	22
X01	RESEARCH	22
X07	FINANCIAL ASSISTANCE	22
X09	RECOGNITION OF CLINICAL ECOLGY	22
D01	SCRATCH TEST	22
T15	WATER PURE	21
X11	RECOGNIZE TESTS OF CLIN ECOLGY	21
P09	PSYCHIATRIST	20
E09	CATARRH	20
A58	PHENOL	20
T14	DIET ORGANIC	20
C01	MIGRANE	20
A45	FABRIC SYNTHETIC	20
M03	MUSCLE PAIN	19
N05	WEAKNESS	19
S05	RASHES BLOTCHING OF SKIN	18
A64	CLEANERS	18
X06	TRAINING OF DOCTORS	18
X08	CLINIC ENVIRONMENTAL SPECIALTY	18
N08	CONCENTRATION POOR ADULTS	18

ALL REPORT
04/25/85

CODE	DESC	COUNT
N13	ANXIETY	18
R11	COLDS	17
T25	SUB LINGUAL PROBE	17
A31	MEDICATIONS	17
T53	DIET SPECIAL OTHER	17
A40	PAINT FUMES	17
C03	CARDIA RHYTHM DISTURBANCES	17
N23	CONFUSION	17
A22	FORMALDEHYDE	17
E14	EYE IRRITATIONS	16
E21	SINUS CONGESTION	16
N14	IRRITABILITY	16
A96	FRUIT	15
E08	SNEEZING	15
S01	ECZEMA	15
S04	HIVES	15
T13	MOVE RESIDENCE	15
S02	CANDIDA	15
M01	ARTHRITIS RHEUMATISM	15
N03	EXHAUSTION	15
N06	INSOMNIA	15
D02	X RAY	15
N32	EMOTIONAL CHANGES	15
R03	HAYFEVER	14
T51	SELF HELP LITERATURE	14
T36	CLINICAL ECOLOGY	14
N07	HYPERACTIVITY	14
N09	MEMORY LOSS SHORT TERM	14
N11	FAINTING	14
A44	PESTICIDES	14
A09	CHLORINATED WATER	13
E15	SINUS INFECTION	13
B10	OIL HEAT	13
R07	CHEST PAIN	13
B35	SUGARS	13
I06	DIARRHEA	13
I07	BLOATING SWELLING	13
X12	RECOGNIZE THERAPIES OF CLN ECL	13
I14	WEIGHT LOSS	13
N20	COORDINATION LOSS	13
A92	YEAST	13
P11	EAR NOSE THROAT SPECIALIST	12
E07	NASAL STUFFYNESS	12
B09	CAFFEINE	12
S08	ITCHING	12
I15	WEIGHT GAIN	12
X24	RECOGNITION OF DISABILITY	12
C09	HYPOGLYCEMIA	12
T16	ISOLATION	11
I09	VOMITING	11
X17	EMOTIONAL SUPPORT FOR ENV ILL	11
M06	BACK ACHE	11
A66	WHEAT	11

ALL REPORT
04/25/85

CODE	DESC	COUNT
D07	CYTOTOXIC TESTS FOOD ALLERG-	11
A91	EGGS	11
D13	BLOOD TESTS	11
N24	NERVOUS	11
P12	NEUROLOGIST	10
R05	BRONCHITIS	10
B01	CARPETS	9
P08	CHIROPRACTOR	9
P18	NUTRITIONIST	9
E13	VISION BLURRING	9
P37	PAEDIATRICIAN	9
T35	OXYGEN	9
B37	VEGETABLES	9
X30	MORE CLINICAL ECOLIGISTS	9
A11	COSMETICS	9
D06	SUBLINGUAL DROPS TEST	9
N26	NUMBNESS IN EXTREMITIES	9
A94	BEEF	9
R01	WHEEZING	8
I08	CONSTIPATION	8
X43	HOSPITAL WITH CE UNIT	8
A76	PORK	8
A78	SALT	8
N30	CRYING SPELLS	8
N33	LEARNING DISABILITIES	8
A13	DETERGENTS	7
P13	INTERNIST	7
P30	GYNECOLOGIST	7
P33	GASTROENTEROLOGIST	7
A68	COTTON	7
B41	HEAT EXTREEM	7
I13	INDIGESTION	7
C05	CIRCULATION IRREGULARITIES	7
D05	INTRADERMAL ADMIN OF EXTRACTS	7
A47	PLASTICS SHEETS FILMS	7
N35	STRESS LOW TOLERANCE	7
N40	AGGRESSION BEHAVIOURAL PROBLEM	7
A98	GASOLINE	6
P03	ACUPUNCTURIST	6
A25	GAS APPLIANCES	6
P25	DERMATOLOGIST	6
A26	HAIR SPRAY	6
X51	INFORMATION ON CE AVAILABLE	6
B21	PETROCHEMICALS	6
F07	FAMILY	6
F08	SAVINGS	6
A66	STORES	6
B28	CHOCOLATE	6
T44	EXERCISE	6
T47	TRANQUILIZERS	6
G15	BLADDER INFECTION	6
X03	PURE FOODS EASILY AVAILABLE	6
X04	ADDITIVES IN FOOD CONTROLLED	6

ALL REPORT
04/25/85

CODE	DESC	COUNT
X35	INSURANCE COVERAGE	6
I22	BLOOD IN STOOL	6
A39	ALCOHOL	6
N17	SPEECH SLURRED	6
A49	RUBBER BACKED CARPETS	6
N39	SHAKING TREMORS	6
A95	MITES INSECTS	6
D27	ECG	5
D31	PSYCOMETRIC TESTING	5
P16	CARDIOLOGIST	5
E11	DEAFNESS INTERMITTENT	5
E17	VISION LOSS	5
B14	METALS	5
E22	VOICE LOSS	5
A62	VARNISH	5
S13	PERSPIRATION	5
A28	INSECTICIDE NO PEST STRIPS	5
B20	PENICILLIN	5
T10	PSYCOTHERAPY	5
T28	ADRENALINE SHOTS	5
G01	ENURESIS	5
B27	PEANUTS	5
A67	FABRIC	5
G06	MENSTRUAL BLEEDING HEAVY	5
G11	VAGINITIS	5
I10	CRAVINGS FOOD	5
S07	FLUSHING	5
X32	MEDICAL SCHOOL TEACH ENVIR MED	5
X38	NO SMOKING LEGISLATION	5
A12	DEODORANTS ANTIPERSPIRANTS	5
D12	FASTING	5
A93	ORANGES	5
D23	SURGERY EXPLORATORY	4
D24	BRAIN SCAN CAT	4
A73	NOISE	4
O06	WORKPLACE ENVIRONMENT	4
A51	SCENTED SOAPS	4
A02	AIR DEODORIZERS SPRAYS	4
E05	EYES WEEPING	4
P24	EYE DOCTOR	4
X18	FINANCIAL ASSIST ENVIRONMENT	4
P29	HOLISTIC DOCTOR	4
E16	RHINITIS	4
T02	NEUTRALIZATION	4
E29	EYES RED	4
B22	WORKPLACE AIR	4
F05	CHIP	4
T32	ENZYMES DIGESTIVE	4
T39	MYCOSTATIN SUPPOSITORIES	4
T50	STEROID CREAMS	4
A33	MOTH BALLS CRYSTALS	4
T55	ACUPUNCTURE	4
T58	VEGA TEST	4

ALL REPORT
04/25/85

CODE	DESC	COUNT
T51	SURGERY	4
B38	DRUGS FOR HAYFEVER	4
X02	INGREDIENTS ON LABLES	4
A75	ACRYLIC	4
E06	EYES SWOLLEN	4
X48	FINANCIAL SUPPORT BY GOVT	4
C06	PALLOR	4
M05	WEAKNESS MUSCULAR	4
A83	GLISERINE	4
T41	TOOTH FILLINGS REMOVED	4
N21	NIGHTMARES	4
N27	HYSTERIA	4
N28	SUICIDE	4
D18	GALL BLADDER DISEASE TEST	4
N43	NEUROTIC	4
D22	BOWEL DISEASE TEST	4
P04	NATUROPATH	3
A51	SHAMPOO	3
P17	ORTHOPEDIC SPECIALIST	3
A53	SOLVENTS FOR COPIERS	3
E03	SWOLLEN GLANDS	3
P34	ONCOLOGY	3
A27	PLASTIC PACKAGES	3
R09	PNEUMONIA	3
A17	FELT TIP PENS	3
B12	CHICKEN	3
S11	BURNING	3
E25	TASTE CHEMICAL	3
B19	STARCH	3
T12	FACE MASK FILTER	3
T54	BIOFEEDBACK	3
F06	INSURANCE PRIVATE	3
T21	MEDITATION	3
T27	NASAL SPRAY	3
T30	CAUTERIZE NASAL LININGS	3
T48	HYPOGLYCEMIA DIET	3
T46	SLEEP TIME INCEASED	3
I00	GASTROINTESTINAL	3
I01	COLIC	3
I16	ULCERS	3
E24	MOUTH DRY	3
B07	WALLPAPER	3
X26	GERIATRIC ECOL SAFE FACILITY	3
S15	BOILS	3
M07	SWOLLEN LIMBS	3
A81	FEATHERS	3
E23	THROAT HOARSENESS	3
C11	HEPATITIS	3
N12	ANAPHYLAXIS SHOCK	3
N16	DROWSINESS	3
A21	FLUORIDATED WATER	3
D14	MONONUCLEOSIS TEST	3
N29	VERTIGO	3

ALL REPORT
04/25/85

CODE	DESC	COUNT
N34	PERSONALITY CHANGES	3
N37	OEDEMA	3
N41	THYROID CYST	3
F04	UIC SICK BENEFITS	2
O03	MOVE TO CITY	2
O09	VIRAL INFECTION	2
A36	OIL LUBRICATING	2
R10	PLEURISY	2
D29	HAIR ANALYSIS	2
E26	NOSE BLEEDING	2
B02	INDUSTRIAL WASTE FUMES	2
D33	GLUCOSE TOLERANCE TEST	2
G10	MENSTRUAL CYCLE IRREGULAR	2
B04	LOTION SKIN	2
P26	PODIATRIST	2
P32	IRIDOLOGIST	2
T09	MASSAGE	2
R00	RESPIRATORY	2
B11	SMELTS	2
E18	EAR DISCHARGE	2
X33	INCREASE TIME WITH THERAPISTS	2
E28	NUMBNESS IN JAW CHEEK	2
S03	DERMATITIS	2
A72	PROPANE	2
T20	LAXATIVES	2
O01	ALLERGIC REACTION CAUSE UNKNOW	2
P20	RHEUMOTOLOGIST	2
A01	AEROSOLS	2
I03	BOWEL IRRITATION	2
E30	EYES HEAVY	2
D25	BODY SCAN	2
E31	SENSES REDUCED TASTE AND SMELL	2
F02	WELFARE MEDICAL	2
P07	KINESIOLIGIST BEHAVIOURAL	2
A15	DYES	2
P05	HOMEOPATH	2
P21	HYPNOTHERAPIST	2
T43	PLANT PHENOLICS PROGRAM	2
I18	GALL STONES	2
C06	TACHYCARDIA	2
T22	CHIROPRACTIC	2
A14	DISINFECTANTS	2
X13	WATER PURITY GUARANTEED	2
X05	LOWER PRICES SPECIALTY FOODS	2
S14	SKIN INFECTIONS	2
X34	EARLIER TESTING	2
A74	LIGHT	2
I25	ANAREXIA	2
P28	DENTIST	2
T57	PHENOLICS DESENSITISATION	2
I02	COELIAC	2
F09	FINANCIAL OTHER	2
X50	MEDICATION FREE	2

ALL REPORT
04/25/85

CODE	DESC	COUNT
T34	HYPNOSIS	2
A19	FLOOR CLEANERS WAXES	2
E30	EYE EAR NOSE THROAT	2
D04	HISTORY COMPREHENSIVE	2
N15	ELATION	2
N22	SEISURES	2
X15	NO SMOKING IN WORKPLACE	2
N38	BRAIN FUNCTION IMPAIRED	2
D20	THYROID TEST	2
T08	ORTHOMOLECULAR THERAPY	2
I19	LIVER SWOLLEN	1
X28	GOVT CONTROL AIR QUAL INSIDE	1
N25	HALLUCINATIONS	1
D18	LUKEMIA TEST	1
G08	VAGINAL SORES	1
O11	STRESS	1
T11	PSYCOANALYSIS	1
F01	DISABILITY PENSION	1
X20	SCHOOLS FOR ENV SENS CHILDREN	1
A41	PARAFFIN	1
P31	METABOLIC SPECIALIST	1
D28	LUNG TESTS	1
X29	MAGNETO PULSE IN HOSPITALS	1
C04	SPASM	1
P23	DIETICIAN	1
P19	OSTEOPATH	1
T56	SUN LIGHT	1
B17	PROGESTERONE	1
A63	VARSOL	1
G12	PRE MENSTRUAL SYNDROME PMS	1
I11	THIRST ABNORMAL	1
I21	VOMITING BLOOD	1
B30	PAPER	1
O07	HOME HEATING METHOD	1
X31	DISABILITY PENSIONS	1
A10	CHRISTMAS TREES	1
A50	RUBBING ALCOHOL	1
O04	CHLORDANE EXPOSURE	1
X41	GOVT COMPENSATION UREAFORMALD	1
O08	PHYSICAL INJURY	1
D19	ULCER TEST	1
X47	MEDICAL SCHOOLS INCREASE NUMBR	1
T59	SHOCK THERAPY	1
G09	BREASTS PAINFULL ENLARGED	1
I17	TEETH SENSITIVITY	1
X14	GOVT CONTROL OF ALL GAS EMISNS	1
T52	PALLINEX INJECTIONS	1
X49	CHEMICALS CONTROL IF TOXIC	1
T51	RESPIRATOR	1
A23	FUNGICIDE	1
N31	AMIOTROPIC LATERAL SCLEROSIS	1
B44	SULPHITES	1
D21	URINANALYSIS	1

ALL REPORT
04/25/85

CODE	DESC	COUNT
C10	MONONUCLEOSIS	1
P22	VETERNARIAN	1
D15	HEPATITIS TEST	1
B29	CHLORDANE	1
P27	IMMUNOLOGIST	1
B08	ICING	1
T38	IRIDOLOGY	1
D32	BONE MARROW TEST	1
A65	APPLIANCES TV RADIO TELEPH ETC	1
A84	COCONUT	1
A99	BACTERIA	1
D26	PULSE TESTS	1
O05	ROOT CANAL	1
B06	FOAM MATTRESSES	1
E20	NASAL INFECTION	1
M04	BONE PAIN	1
S16	PSARIASIS	1
T45	WORK HOURS REDUCTION	1
B26	LAMB	1
N18	MULTIPLE SCLEROSIS	1
B39	BEE STINGS	1
T24	VAGINAL CREAMS	1
C02	HYPERTENSION	1
G05	BLOOD IN URINE	1
S06	BRUISING	1
N44	SOMATIZATION SYNDROME	1
T17	PRAYER FAITH HEALING	1
D17	ANEMIA TEST	1
T26	MAGNETO PULSE	1
X40	PERFUME FREE AREAS	1
X23	FINANCIAL ASSIST TRAVEL COSTS	1
X52	PREVENTATIVE MEDICINE HOLISTIC	1
B05	HAIR PERMANENT SOLUTION	1
A56	STAINPROOFING MATERIALS	1
T19	INTAL	1
B43	FABRICS NAURAL	1
T60	PHSIOTHERAPY	1
X44	ALLERGY TEST PSYCHIATRIC PATNT	1
D03	ULTRASOUND	1
I23	FOOD UNDIGESTED	1
O02	FORMALDEHYDE EXPOSURE	1
T62	ENVIRONMENT CHANGE EXTREEM	1
G07	VAGINAL ITCHING	1
A30	LACQUER	1
P14	ENDOCRONOLOGIST	1

Summary for REPORT:
Total 3579

Appendix 5 This letter from a severely ill patient has been typed to ensure legibility after reproduction. Although permission has been received from the author for public release of this correspondence, elements of identification have been deleted to preserve as much confidentiality as possible.

December 29, 1984

Judge George M. Thompson, Chairperson
Scientific and Technical Committee
Provincial Court (Family Division)
311 Jarvis Street
Toronto, Ontario
M5B 2C4

Dear Sir:

I am very pleased to hear that a committee has been formed to study Environmental Illness, and that you are the Chairperson. I hope that as a result of all your hard work, many people with this illness will benefit in many ways for we and families have many needs that are not being met now.

I apologize that this is not typewritten but I am no longer able to use our typewriter. I may even have to give up on this pen before I finish as I usually use a pencil for correspondence - but I am attempting to make this look a bit more presentable than my normal correspondence to friends. So, I hope you can read my writing.

You may wonder how a 37 year old mother (farm wife - former teacher) with two school age children home on holidays could manage a letter at this busy time of the year which is usually filled with family and social events. I am able to manage it because my husband took our children away early this a.m. to travel 150 miles to go to see my father at his home, take him on to see my mother in the hospital. So here I am alone again, writing to you to try to let you know just how my life is-firstly it's lonely because I cannot see the family that loves me and needs me. My parents are at an age where they need me and I can't walk inside their home because I collapse from the propane gas, their wood smoke and their cooking odours. I can't even give them a hug because the detergents on their clothing causes asthma, itching, depression, migraine and weakness. I have a huge family with huge family gatherings - even when they "prepare their bodies" for me, I still can't be in an enclosed area with them. I miss all the family events, this fall, I missed seeing my two children as ringbearer and flower girl in a niece's wedding - then I missed my husband's parents' 50th wedding anniversary party - as well as my children's Christmas concerts, plays, recitals, lessons, games, etc., etc. Such isolation I never knew existed until I became well enough again to realize what I was missing. For you to see, I was missing quite a few things, for quite a few years but I was so desperately ill, wondering if I'd ever see a painfree moment, or breathe freely or walk by myself again and get myself to the bathroom alone that I wasn't really aware of much else. I was more interested in trying to convince myself that I was not a quitter and that I would not give up! and that I would get out of that bed, out of that room and get somewhere, somehow & get some help.

During the nine years (almost 10) that I have been ill (since the birth of my second child), I've been through the mill - so to say - in my search for the cause of my pain and weakness. My G.P. diagnosed a classic case of migraine - we started in the merry round of migraine medications. Himself, a migraine sufferer, we discussed attacks - yet mine continued to worsen, began to baffle him. My husband would cart me in, the G.P. would ask "how long have you had this one?" and if I were able to reply, I may have said 2 weeks - 2 months. He'd get out his big blue book (it has a name - look for another drug to try. Meanwhile, I was trying very hard to find out more about migraine and trying to look after my home, my children and teach part time. When the G.P. had me on various medications and I seemed to get worse and worse, we started the round of specialists - well I was a classic case of allergies - confirmed by 2 orthodox allergists. Finally, we had an answer and so begun the hyposensitization shots and the mad rushes to the emergency and the almost total confinement to bed except for the occasions when codeine would make me hyperactive and I'd get up clean my house, go out, or have friends over or whatever until I again collapsed. The orthodox allergist told me from *his testing and blood work, he was surprised that I'd even been able to travel from Toronto from the and that my allergies including fatique, etc. - were keeping me so ill.

Upon each reaction to serums and after long distance calls, etc., I was reassured that I was just super sensitive and that serums needed dilution. Upon arrival at emergency, once my G.P. suggested that we forget the allergy shots and that I stay in the hospital where I belonged. Well, I already knew I couldn't stand hospital (1) noise, (2) light (3) smells - including sheets, cigarette smoke, cleaners, waxes, staff perfumes, disinfectants and (4) foods - including just about anything at that point, so, I was treated in emergency and released - but discontinued shot.

In the meantime, my baby was now five years old. I felt like I'd missed her childhood completely. My husband felt like he was mother to all of us and he wondered if he'd ever have a wife again. I wondered if what everyone hinted to me were really true - that this was all in my head that "I was just a neurotic housewife who had too much time to think of herself.

I was trying to cope with migraines and other debilitating symptoms as well as trying to continue my part time teaching job. During my better months, January - February, I had sometimes been able to go into supply teaching at the small school where I had taught before my first child was born. The principal valued my supply teaching skills and went all out to make the school O.K. for me. She didn't wear perfume or allow anyone else to, when I was coming, no smoking, no room deodorant, no freshly done ditto sheets. I loaded up on antihistamines and was able to teach sometimes. Sometimes, I couldn't and had to be driven home. Spring and fall, I wasn't called because she knew I was always ill in spring and fall. It wasn't much teaching but it sure helped to pay some of our bills - for medical expenses for me and for trips to specialists, etc.

In the spring of 1980, I finally consented to staying in the hospital - 'overnite' - well after one month and 20 lbs. weight loss in spite of very strict and consistent efforts of staff to protect me from hospital odours, etc., etc. I came home to bed to await my appointment with another specialist. My neurologist had referred me to acupuncture therapy*. The acupuncture helped with the pain. I was able to eat again, however, has office wiped me out. He would be forever rushing me outside for air. This was very expensive due to the travelling - also, I was reacting more and more to his office so, this had to be discontinued.

In the fall of 1980, I had some testing done by a clinical ecologist who verified when I had long figured out on my own (with the help of orthodox allergists) that I was very food chemically sensitive - that what others may not even be able to smell - I could smell and it make me weak, nauseated, migrainous, depressed, itchy, asthmatic, black out, sleepy, dizzy, drowsy, fatigued, disoriented hyperactive or whatever depending on the substance.

I came home - was six weeks in bed before I was able to be up on my own & I could figure how and what we were going to do next. We knew, we couldn't travel to Toronto and S. Ontario for testing because: (1) we couldn't afford it (2) the clinical ecologist did not recommend drops because I was so unstable, he had no treatment for me anyway (3) there was no place for me to stay in the city because friends' homes make me ill, so, do hotels (4) by the time I reached Toronto, I was too ill for testing.

So since 1980, I have been trying to make my home environment safe for me, trying to find foods which I can eat, and trying to rebuild my immune system through, rest, relaxation, exercise, prayer. I always try to be thankful that I survived. I don't know what lies ahead for me or for my family. I don't know where to turn for help. I know many people are being helped by alternative therapies, by clinical ecologists, by treatment for years infections, etc. I cannot travel to try these therapies. I can't afford them anyway. I have no disability pension. I did not even try to get one through my private life insurance company because I know of the hassle involved and I do not have the strength to face that stress - to fight that fight. I know of the struggle others have and I do not want to take that one on just now.

I try to use my energy to provide a loving environment for my children as well as do as many of the many tasks which need to be done to keep our home safe for me. I am now able to look after myself a lot of the time. When I am not, my family must provide the 24 hours nursing care, I require as my G.P. was unable to secure Home Care for me. Even if he were - he would never be able to find one who could get near me without me becoming worse because of the scents, etc., which everyone has on his clothing and body - so my family must do this.

The isolation I have is not 'healthy' for anyone I know but I don't know how else to keep myself mobile. I do try to see friends on occasion out doors and I try to keep in touch with family and friends. The frustration of not being able to afford treatment, if there is any, is stressful for us. Also, my husband has this fear that there is no place to take me in case of accident. They don't want me in my local hospital because they know what happens to me there. I fear for our future as a family. I am thankful that we have managed to stay together because I know many families break up due to the stress, frustrations of this illness. There are many adjustments for all of us.

I have concerns for the future health of my children because of the genetic nature of allergies. Will their mild allergies, now develop into this later? Is there more we could do to prevent this? These are some of my questions.

When my family returns tonight, they will have to undress out in an unheated porch because we can't afford to heat it, so as not to expose me to any of their chemicals. They will have to bath thoroughly and yet none of them will be able to give me a hug or be able to sleep with me. I will be behind the walls in my bedroom asking the same old questions: Did you have a good day? How is grandma, how is grandpa?, etc, etc. I will be ever so thankful they've arrived home safely and asking to cuddle and touch them but I know that by tomorrow I will be able to probably unless tomorrow, I am ill.

It is getting dark and I've turned the lamp on. It has been good to spend this afternoon telling you my story - yet difficult for me, although I realize I've come so far and I can think, feel and laugh again. I realize, for me, the future is uncertain - just as it is for the thousands of others all over the world who suffer this illness. I hope that your committee will recognize this illness and that research will give us some answers.

Sincerely

Appendix 5 This letter from a severely ill patient has been typed to ensure legibility after reproduction.

February 2, 1985

Judge George M. Thomson
Provincial Court (Family Division)
311 Jarvis Street
Toronto, Ontario

Dear Judge Thomson:

I am going to try to put my experience in itemized sections, so as it is easier for you to study and comprehend.

CAUSE: In Florida, on holiday - took severe allergic reaction to something. I ate or drank and was rushed to hospital and given medication to control reaction, but nothing happened. Thus, I was given a repeat of same shots - severe head pain resulted and from then on I went down hill.

TREATMENT FOLLOW-UP: A few days later, severe hungry and weak spells began, to the point of hanging on to things to stand up, as I got so faint. As I was still in U.S.A. and O.H.I.P. didn't cover all, expenses, I had to pay many bills on my own. (I was given more consultation, blood tests and medication to try and help me)

When I returned home to doctors started me on different drugs for tension, as they felt this was the cause of my symptoms. I reacted very badly to all of them and was felt much worst after each one.

By this time, I was having severe head pain, 24 hours a day, weakness, migraines, tachycardia, nausea, vomiting, dizziness, and I lost the ability to use my eyes for about 2 years. (My mom had to read things to me - she read about 10 books to me over that period of time). I was unable to lay down, as the symptoms increased in intensity. Thus, I slept sitting almost straight up for about 2 years. My parents finally resorted to getting a hospital bed from Red Cross, so, it could be rolled up to the angle I needed. Pillows couldn't be piled high enough.

After seeing 30 physicians in every field - heart specialists, ear, nose and throat specialists, internal medicine specialists, standard allergist, , topical fever specialist, family physicians, psychiatrists, etc., plus being in different hospitals - all unable to offer any conclusive diagnosis (with the exception that they discover a Lupus trait in one of their tests, which I was told to check on every year).

I was directed to see Dr. Clinical Ecologist (my parents in desperation, had gone to a Health Seminar and gone around to the different people telling them about my case and asking for help - one answer was to write to Doctor and he recommended Doctor .

DIAGNOSIS: Doctor , through consultation and testing, found me to be severely allergic to foods and chemicals. After many months, he put me in a chemically free home of another patient, and tested me - about 50 foods (organic) - all of which I reacted to (He fasted me for about 6-7 days on spring water). I then went to live in an apartment in which I kept free of perfumes, smoke, cleaners, etc. If I stayed in isolation - which I did for 2 years, my symptoms eased about 25 - 40%. But if anyone came into my apartment, or I went out, I was back to square one again. Eventhough, family and friends bathed and washed hair in my soap for 5 days previous, and wore clothes I provided, they picked up odors on the way and I got sicker from their visits. So, isolation became the only way for me to have a level of symptoms that were easier to handle. For many months, I was unable to use even a radio. Gradually, after about 6 months in isolation, I could listen to an old radio covered up, for very short periods of time.

As I wasn't progressing fast enough, Dr. moved me out of pollution on a trial basis (to a patients home in). After many weeks, I began to notice minor improvements.

I could drive my car again, for short periods of time - first wearing a charcoal mask, then going without it. (From this feedback, Dr. suggested me to move , permanently - thus to finding suitable ecological housing, is very difficult. It cost me a few hundred dollars, and the moving cost me a few hundred more.

RESULTS OF MOVING NORTH: I have seen more benefits from this moving. The air is a major factor for me. As I found testing and serums just made me worse. I chose to stop these parts of the program, and keep to the clean air, clean water, organic food. On this regime I saw more definite changes. For a high percentage of patients, serums really benefit them (for myself and for others, it seems that our systems aren't strong enough to handle either the testing or the serums. Each time, I tried them again, I went backward.

I went to a homeopath for a period of time (until I began to react to the treatments) and he was able to bring another percentage of healing to my system.

I also went for prayer (laying on of hands)and saw more improvement. As we are made up of body, mind and spirit, I believe all three must be dealt with, in order for total healing to take place.

After 5 years in area, I can go to town once a week to shop- if I move in and out of stores quickly (when I first came up, it was a nightmare - I was sick afterward). The cleaner air helped me to be able to shop for very short periods of time, but I was in bed for a few days after.

Shopping was out - I was just too sick to even try - Dr. & my parents did all my shopping needs for me - (food, personal items, etc.)

FINANCES: Because I could not get a diagnosis in the beginning, it took me a very long period of time to obtain my disability pension from Mutual of Omaha Insurance Co. (As it is, they owe me $2,000.00 for the time I had the disease, but had no diagnosis. They refused me the $2,000.00 for that reason)

For my disability pension from them, I had to use a lawyer's services, which came to about $1,000.00. Up to the point, I received my disability pension, I was on unemployment insurance (for 15 weeks) then on welfare - about $216.00/month. As O.H.I.P. didn't cover all doctors' expenses, I had to pay a fair sum of money out (I can't tell you how much?, I can't remember)

My staying at the other patient's home for and food testing came to well over $1,000.00 - none of these were covered by anything, even though, the patient was a Registered Nurse.

My moving from - cost me a few hundred dollars.

My disability pension cheque does not increase with the cost of living. My Canada Pension does. This year, I received about a $10.00 increase (4.4% cost of living allowance). This doesn't come close to meeting the needs which I have.

CAR: Because of living where I do (to have the cleaned air), I need a car. My parents bought me a used car - $2,400.00, 2 years ago, when my other old car broke down. Now I am in need of another car as this one is rusting out quiet badly and fumes are getting in, causing my symptoms to increase when I have to go to town.

PROBLEM: I don't have any money to buy one and neither do my parents - they are both retired and on pension.

CLOTHING: As I react to all fabrics - even cottons, I've had to purchase many things, many of which cause me reactions when I try them on, so have to be discarded or given away.

Money has gotten so tight, I don't have funds to try and find clothes to replace what I have worn out. I have seen me spend $100.00 on clothes and be able to wear either none of it or about 25% of it. So you see - clothing is a very costly affair for me.

FOOD: As I try to eat as much organic food as I can and organic food is more expensive than commercial grown food, this is another great expense. I spend about 1/3 of my finance on food. I need to spend more to have a good, well balance diet, but I can't afford it.

There is no money whatsoever for medical expenses, dental bills, or any other extras which I might need. All my savings are gone, due to expenses incurred during my illness, I was forced to drop Blue Cross Insurance because of lack of finances.

INSURANCE CO. PROBLEMS: At the moment, there is a chance which I could lose my Mutual of Omaha Disability Pension, which I fought so hard to get it.

Even though, they have well documented evidence of my illness (or could obtain it from Dr.) they have insisted from time to time that I go back to a Clinical Ecologist for re-evaluation. At one of these insistances, I attended a Clinical Ecologist who was very open and understanding of the fact testing made me feel worse, so he used another method for his assessment and I became worse and was left with a problem in my left arm which I didn't have before. The next time, I refused to go through anything again and they said O.K. - as long as you can get a physical by an M.D., we'll be satisfied. Once again, they are pushing for re-assessment and refuse to allow my M.D. to give me my physical to allow for continuation of funds. They are demanding, I travel to Toronto to a Clinical Ecologist to be re-assessed, and they will pay for any treatments, etc., he wants to do. I am fighting it all, the way, this time, through a Legal Aid lawyer, as I am just beginning to feel like a human being again. I am finally able, after 9 years, to tolerate a T.V. used in my home, also a stereo - both gifts to me. I can now get into a couple of other homes for a short periods of time periodically, my foods and chemicals are finally substantially, more stable for longer periods of time. My town visits are becoming easier. All these improvements have come from a LOT OF hard work on my part - careful eating habits, clean air, clean water, and very careful controls on my exposures both in and out of my home.

A trip to Toronto in a car, I don't tolerant (mine is too smelly from fumes to travel that far), any treatment or testing this, Doctor chooses to us - from past experiences, these things have put me back in bed for sometimes - 2 months - my foods and my chemicals become very unstable and I have to stay all over again. As I understand, I am not the only one fighting with these insurance companies. HELP is badly needed here.

Do they have the right to cause pain, etc., to be inflicted on a human being just to get their needs met? Do I have to be subjected to pain in order to receive benefits rightfully mine?

Because it is a relatively new diagnosis, in the field of medicine, and because it brings about so many needs and so much need for understanding on the part of many professionals and institutions, I trust this committee will be the beginning of a listening ear to our cries of help.

Sorry, this is so long, but all that is involved to give a total picture can't be summarized in a much shorter form. Thank you for your time, Mary, and good luck as you proceed to make up your report.

Sincerely,

P.S. : Could you pass this on to the Judge to read as it would give him a clearer picture of the situation.

APPENDIX 5 - Letter - Severely Ill Patient

Dec. 28th, 1984

JAN 4 1985

Judge Geroge Thompson,
Chairperson,
Committee on Environmental Illness,
Provincial Court,
Family Division,
311 Jarvis St.,
TORONTO, Ontario
M5B 2C4

Dear Judge Thompson:

I am encouraged by this opportunity to tell my story to the Scientific and Technical Committee on Environmental Illness.

I am a thirty-four years old single woman. I have a degree in social work and worked in my profession for five years after graduation. I worked three years for the Children's Aid Society and two years for an Infant Development program.

For the past three and a half years I have been unable to work or even look after myself due to Environmental Illness.

My symptoms are many but my most disabling are severe depression, weakness and blackouts. These now occur at the slightest exposure to chemical.

I suffered from traditional allergies and asthma as a child. When I was attending the University of Toronto in 1969, the majority of my classes were in the Faculty of Dentistry Building. I began to suffer from dizzy spells and severe depression. These symptoms first occurred in clinics and anatomy labs and later generalized. I was forced to quit university and ended up in a psychiatric ward. I was treated with shock therapy and drug therapy.

I was unable to find anti depressants that were of much use and after two years I gave up on trying medication. I moved back to and then worked for two years in . I later attended university for four more years and worked five years.

During this time, I suffered from severe depression off andon. The last one and a half years I worked I was again seeing a therapist on a regular basis.

.....2

Nothing helped. My health deteriorated with gastro-intestinal problems, depression, dizziness, weakness, exhaustion and collapsing. I went to various doctors and clinics but nothing ever showed up.

In 1981 I saw a clinical ecologist and was diagnosed as having environmental illness with multiple food and chemical sensitivities. By this time, I was no longer able to work. Six months later, I had no money and no place to live. I had applied for Disability from the Ontario Ministry of Community and Social Services. I had been turned down.

Friends who live on the took me in. I spent the summer there but in the fall I could no longer stand the smell of wood smoke used to heat the house. I now blacked out from the slightest exposure to perfume, fabric softeners, shampoos etc.

My 77 year old aunt moved out of the apartment above my parents' home. I have been living here in isolation for two and a half years.

I can go no where - not even to visit in my parents' home. I have not seen a doctor for two years because first I cannot make a trip to Toronto and secondly the doctor has told me there is nothing he can do for me at this time because I am too sensitive.

My parents, my Mother 63 years old, my Father, 75 years old are still working full time trying to make ends meet. My Father a barber, my Mother a secretary, will retire with no pensions other than the Canada Pension Plan.

I see no one - day in and day out. My Mother has a back condition and only climbs the stairs when I need nursing care i.e. need help to get to the bathroom etc. My Father, on working days, is too perfumy for me because of the barber shop.

When I moved home, I applied for welfare and again applied for Disability from the Ontario Government and Canada Pension Plan Disability.

I was granted Welfare after two workers came to my place. I blacked out and came to gasping for breath. The smell from their clothes was far too strong for me. My Canada Pension Disability was granted without any questions or difficulty. It is only $241. a month.

I was again turned down for Disability by Ontario with absolutely no explanation. I felt desperate and defeated and really didnot feel able to launch an appeal. I was fortunate this time to have an MPP who was willing to fight for me. One and a half years after my re-application I was granted Disability. An incredibly long, stressful time. I think the only reason my application was accepted was because of the political pressure applied.

I have had support from my family and friends - what happens to those with no money, no home, no job, no family no friends. Believe me when I say, there is no where to turn.

My parents and I have grave concerns for the future. My total monthly income is $459. My "less contaminated foods", which we have shipped from Toronto, cost over $300. It will cost more when and if I am ever able to tolerate more. I have to rent oxygen tanks and buy supplements to bolster my grossly inadequate diet. My parents had to convert to electric heat, they have to keep a second car going because I cannot tolerate the perfumes etc. in other cars. There is just no money to keep this up much longer.

Even if I could make trips to Toronto and have treatment, I could not pay for the trips or the testing procedures used.

There are no doctors in the area who can actively treat me. No matter how sick I am I have no one to call - I face it alone. I am afraid to go to the hospital because no one understands how sensitive I am. Last February, I chose to stay here alone, with no medication, while I passed a kidney stone rather than risk going to a hospital. I was fortunate that it passed and didnot require surgical intervention.

Judge Thompson, something has to happen for us. We need the illness recognized. We need good scientific research immediately. We must have adequate funding to cover our expenses. We need understanding and compassion from the medical profession and government agencies. At times, I am so exhausted, so tired, so fed up, so frustrated and so sick I can hardly go on.

I would hope that the focus is placed on the illness, the patients and their families. I have many concerns about the now available treatment but it is all that is offered to us.

I found it difficult to believe in Ontario there is no help for me. Do I have nothing but isolation ahead for many more years? All that I am as a person says isolation is destructive. Place anyone in isolation for years and what happens?

As I reread this letter, I realize how inadequate words are in expressing all the pain, loneliness and despair I have experienced. Each day I wake up I chose life. Many nights when I go to bed all I can say is I made it through another day. We all need help - what more can I say .....

Yours sincerely,

APPENDIX 6 - Example of costs

APPENDIX A

My Monthly Expenses in treatment of Ecological Illness

Pancreatic enzymes	$100.00	
Vitamins	50.00	
Oxygen 20% of $100.00	20.00	(this was much higher)
Organic food extra cost	50.00	
Desensitizing drop	15.00	
Testing & Doctor's visits	20.00	(this was much higher)
Steam activated charcoal	30.00	
Taheebo tea	25.00	
Extra travel & expense to get chemically free products	50.00	
Total each month	$360.00	

Appendix 6 - Costs   This submission has been typed to ensure legibility after reproduction.

Present Treatment Tegretol (200 x 4 per day = 800 mg).
Opticrom eye drops for dry, bloodshot eyes.
Various drops from homeopath.
Dust, mold and ethanol allergy drops.
Ionizer in bedroom.
Use of magnetic machine for short periods of time.
Diversified rotary diet.
As much organic food as possible (especially fruit, vegetables, oils and nuts).
Oxygen Tank in bedroom for use to shorten length and intensity of attacks.
Many food supplements to improve nutrition.
Chiropractic treatment and cranial therapy.
Avoidance techniques, e.g., will never perm hair, wear cotton clothes, etc.

Approximate Costs per Year   (Not covered by OHIP)

Oxygen	$ 900
Supplements	3,000
Naturopath	1,000
Homeopath	800
Chiropractor	300
Magnetic Machine	1,000
Clinical Ecologist	1,000
Prescriptions: Tegretol and Opticrom	700
Travelling by bus to doctor's	800
Long Distance calls to doctors	100
Most groceries from health food stores	1,300

This submission has been typed to ensure legibility after reproduction.

.... it was up to the practising doctors to come up with good scientific background to justify their procedures. In some ways this was a lot to expect from this type of doctor because generally they were underpaid for the amount of time that they tended to give to their patients. In effect, basic research should have been funded for this work. It has now been 7 years since this letter was written and I'm not aware of any such public funded research. It grieves me that the medical profession is still more interested in treating symptoms than in finding the true cause of illness.

Over the past 7 years, our medical costs for Dr. have been close to $2,000 of which OHIP has paid less than 25%. At the present time, a day (6 hours) of testing and treatment cost $80.00 of which OHIP pays $14.40. I feel these costs are quiet (sic) reasonable and well worth the benefits which have resulted.

Over the past few years I have been free of my original symptoms but of late I have developed new symptoms brought on mainly by mould. These symptoms include bruising and arthritic conditions. I have from time to time been in desperate need of a place I can go to be completely free of polutants. At one time rooms were made available in hospitals for this purpose but no longer seems to be the case. It is hoped that the ...... Research Centre, ... Ontario will help fill this void.

....of allergy with Dr. in January, 1985. (I was too ill until then to make my scheduled appointments.)

Between July, 1984 and January 1985, I stopped eating many of the foods suspected of allergy and stopped most of the drugs I was taking. My migraine headaches have never returned since July, 1984. My digestion improved somewhat, but I still had recurrent indigestion, nausea, diahorrea (sic) and sinusitis. The testing from January until present (4 sessions) has revealed extreme sensitivities to many chemicals, most grains, milk products and some other foods such as potatoes, eggs, sunflower, etc.

Dr. made up serum drops for the chemicals I am sensitive to which neutralizes the reactions in my body. I have now given up all the major foods I am allergic to and my digestion and diahorrea (sic) have improved greatly. I will be getting serum drops for some of the foods as well so that I can eat small amounts. I have started to put on weight again after dropping to 104 lb. in May/June 1984. I am now 111 lb. I try to avoid many of the chemical substances I am allergic to but this is almost impossible as they are so pervasive in our society. Dr. monitors my sensitivity levels and, if further improvement is not noted, he will continue testing for other unsuspected allergies.

Not only has this illness cost me my job and income, but I can no longer tolerate working in an indoors polluted environment, i.e., offices, factories. This restricts my future employment. I am forced to move from my rental accomodation (sic) due to the oil heat and allergens within that I cannot change. Any house that is purchased will likely need costly renovations to install electric heat and rid it of allergens. I had to purchase a $250 Bionaire aire purifier that is inadequate but is all I could afford. I must purchase bottled water to drink or buy an expensive water purifier. I cannot eat many foods and must purchase many items in a health food store at a higher cost. I need vitamins as my diet is not varied enough to supply me with enough nutrients. Even these are costly as they must be yeast, corn and additive free. I spent $1200 above what OHIP pays on doctors and initial consultation ... it does not cover the $70 cost of each session. 5-6 sessions are necessary to complete testing for all food and chemical suspects. The session is from 12 pm to 6.30 or 7 pm and is well worth the cost. During the session two people do the testing aided by Dr. , and, as well, you consult with Dr. twice for 5-20 min at a time. The serums for neutralizing cost anywhere from $15 - 40 per month, at least one for foods and one for chemicals, depending on your personal allergies. This can run up to $80 - 100 per month, but are necessary to stop reactions that are making you ill and allow your body to strengthen to the point that it becomes no longer allergic. The serums are personnally made up for each specific individual at the .... office. The "Nystatin" fungicide to control yeast is between $20 and $35 per month depending on your level of allergy.

The goal of treatment is to lessen your allergies to the point that your body becomes strong enough to recover and is no longer severely allergic. This can take from one to 3 years and some people have never recovered sufficiently to live in the usual environment. The costs of testing and treatment are high and should be covered by OHIP at least partially. Some provision could be made for discounts, rebates or funding on prescription for special changes in lifestyle that are necessary and costly such as organic food, vitamins, cost of water and air purifiers, drugs, buying non-allergenic beds, linens, clothes, house renovations, etc. This should be listed as a specific syndrome for purposes of unemployment insurance, private insurance, WCB payments, disability etc. As it stands now, environmental sensitivity is not usually recognized as a legitimate sundrome by government and private agencies. For severe cases Ontario needs a wing in at least one place they can go for treatment. In its most severe form the disease is life-threatening and should be taken seriously. If we do not relieve the financial burden on the families and people afflicted by environmental sensitivities, then we risk placing a bigger burden on the government as these people lose economic power to be part of this society. This disease is hard enough to bear socially, mentally and physically since it usually involves isolation from friends, activities, shopping, employment, and even family. Please consider alleviating the financial hardship which is in your power to do.

Sincerely,

My apologies for the handwritten submission but I have no access to a typewriter and paper at the moment.

This submission has been typed to
ensure legibility after reproduction.

Appendix 6 Costs

COSTS

PAST COSTS incurred in changing our life style.

Removal of U.F.F.I. less government reimbursement	$ 2,500
Paint	300
4 wooden second hand beds	240
2 wooden armchairs second hand	300
Futon and frame to act as chair/spare bed	300
Cotton floor rugs	120
Reed matting rug	60
Blinds	200
Cotton bedding, sheets, blankets, pillow P. slips for 3 people	450
Cooking utensils, stainless steel, cast iron, glass	300
Microwave oven (cooks fast, fewer smells)	750
100% cotton clothing for 3 people to replace mainly synthetic clothing, for 2 teenagers	2,000
Installing and buying electrical heating with heat pump (we cannot tolerate this)	5,500
4 oil encased floor heaters	536
2 water encased electrical floor heaters	300
	$13,856.

NOT COVERED BY OHIP

Cytotoxic food allergy testing for 3 people x 5 (children re-tested in 1983)	1,500
Sublingual chemical testing for 3 people at Dr. ----- and Dr. --------	660
Neutralizing drops	100
Neutralizing shots	100
Supplementary vitamins, minerals, enzymes and glandulars for 3 people 1981-85	4,200
46 months @ $200 per month	11,560
Sub-total	$25,416
Increase in food costs estimated for	
3 people over 8 months @ $200 per month	1,600
2 people over 38 months @ $150 per month	6,700
Water	
4 water bottles and a pump	65
water at $30 per month for 46 months	1,380
	$35,161.

OTHER EXTRAS

Extra year at Sheridan College for daughter who collapsed half way through the first year	$ 5,000
Special (expensive) housing for daughter (electrical heating, clean environment	4,500
Less cheap Oakville housing	2,700
TOTAL EXTRA COSTS INCURRED	$41,961.

These are only estimates very often but if I have erred it is on the side of moderation.

PRESENT COSTS

Supplements @ $200 per month	$ 2,400
Food @ $300 per month	3.600
Water @ $30 per month	360
Odourless cleaners	270
Zephiran cleaners 4 bottles	112
	$6,742

This does not include any other testing, neutalizing drops, or shots we may have.

I have not included any drugs as my husband's medical plan covers 80% of the cost.

FUTURE COSTS

1) Dehumidifier for basement to control mould.
2) Sanding and refinishing floors with polyurethane to control dust.
3) Cost of myself and son out of house for ± 3 months while this is done.
4) New dryer. I add this as a cost as I use the dryer to get rid of dust and mites. If we dry clothes outside they make us sick. I also use it to ventilate the basement which is mouldy.
5) Ceramic tiling front hall and kitchen.
6) 2 water distillers for my son and myself.
7) 3 portable air filters, son, daughter, self.
8) Renovate kitchen (destroyed by U.F.F.I. removal and never put back as cannot use plasterboard or plywood).
9) Renovate basement to remove moulds.

There are many other costs which I would like to have but will never be able to afford but on a rough estimate the above will be about $15,500.

PERSONAL COSTS

Myself I am a qualified x-ray technician and radiotherapist who cannot tolerate medical buildings. I also am a qualified clerk/typist with first year accounting but if I am reacting I cannot add 2+2 and cannot type faster than 30 words a minute. I have word processing but cannot use it. If my husband did not support me I would be on welfare.

________ Before the onset of this condition ________ was a top athlete. She had her judo black belt at 16 years old and was an almost certain prospect for the Canadian team due to loss of co-ordination she has injured both shoulders and is now badly out of shape with little prospect of regaining her position.

________ Wanted to go into psychiatry but would never be able to handle the chemicals and stress involved in medical training. ________also has a dreadful time with mathematics due to cerebral reactions. ________has a good brain but a terrible time using it.

Gentlemen:

These reactions are real and the misery caused by them is very real. In the doctor's office they can induce the same reaction with the same substance in the same person time after time, and, time after time, by using smaller doses of that substance, they can "turn off" or neutralize that reaction.

Our greatest need is to have this condition recognized by the government and the medical fraternity. Many of us have spent years going from doctor to doctor being labeled "Neurotic", "Hypocondriachal" (sic) or "Menapausal". Many of us have had totally unnecessary operations or been put on strong drugs with side effects that were ultimately worse than the disease. I consider myself very lucky in that I found my answer in a relatively swift seven years.

I dread the thought of having to be hospitalized as I become daily disoriented in both the ________ and the ____________hospitals so while I am sure that I would recover physically, I am afraid that I would probably have a set mental battle on my hands. There are enough of us to warrant special hospitalization. A special wing in one hospital in Ontario or better yet a country hospital closed in the revamping of Ontario hospitals would be a great step forward. I wouldn't mind travelling to use it.

As I mentioned previously, this is a very expensive disease. It is expensive not only in money but in terms of human productivity. It takes a long time of sickness days off work, jobs half or badly done for one to develop full blown Environmental Disease. It takes years of OHIP payments for doctors visits, hospital stays, drugs and tests. Of visits to psychiatrists, physiotherapists, and emergency before the Immune System finally is so overloaded it crashes.

So one has chemical sensitivities and food "allergy" and the only true and kosher allergies are IgE mediated.

Gentlemen, chemicals and certain foods make me sick both in mind and body, and all the Semantical Quibbling and medical posturing in the world does not help me, people like me, people becoming like me or the budget of OHIP.

I leave this in your hands with hope and gratitude that such an inquiry exists.

Yours truly,

APPENDIX 7 - Children with Environmental Hypersensitivity 2/27/85

February 25, 1985

Judge George M. Thompson,
Chairman,
c/o Office of the Assistant Deputy Minister,
Institutional Health,
10th Floor, Hepburn Block,
Queen's Park,
Toronto, Ontario.

Dear Sir:

Please find enclosed our submission to the Environmental Hypersensitivity Disorders Review Committee.

Thank you for the opportunity to relate our experiences and express our views regarding this most urgent topic. We have no objection to any of this material being made public, if it will help others suffering from this twentieth century illness.

Repectfully submitted,

TO: Judge G.M. Thompson,

Environmental Sensitivity Committee

NAME:

ADDRESS:

PHONE:

AGE: 8 years (D.O.B. 13-01-77)

OCCUPATION: Student School for the Deaf

SEX: Female

BACKGROUND: biological mother gave her up for adoption at age 2 years, 11 months because of her inability to cope with the child's hyperactivity, behavioral disorder, and the general demands of her multiple handicaps. On her arrival in our family (first as a foster child, later as an adopted daughter) has exhibited severe behavioral disorders and hyperactivity, complicated by hearing loss, physical disabilities, and a communication disorder. As has matured, the hyperactivity and behavioral disorders have become more erratic and violent, although communication and physical aspects have shown marked, although inconsistent, improvement.

FACILITY: *Ontario Crippled Children's Centre - Toronto*

DATE	NAME	DIAGNOSIS	TREATMENT	RESULTS
1979	*?*	- *spastic diaplaresis* - *sensori-neural hearing loss* - *hyperactive*	- *refer to HSC for surgery* - *physiotherapy* - *netted into crib at night*	- *placed in home as foster child, with intent to adopt*

FACILITY: *Hospital for Sick Children - Toronto*

DATE	NAME	DIAGNOSIS	TREATMENT	RESULTS
1979 (prior to adoption placement)	*Dr. - psychologist*	*- developmental delay*	*nil*	*nil*
	HSC Medical Team	*- cerebral palsy*	*- surgery to extend ankle tendons*	*- improved walking (no longer walked on toes)*
		- hearing impairment	*- fitted with hearing aid*	*- auditory stimulation to left ear*
1983-84	*Child Development Team: - Dr. (Psychologist)*	*- above average intellectual ability - severe behavioral disorder*	*- suggestions to school re programming - behavior modification program - follow-up support to family*	*- some improvement academically - more frustration for child and parents - family more encouraged with support*
	- Dr. (Psychiatrist)	*- severe behavioral disorder*	*- behavior modification program - drug therapy*	*- additional frustration - drugs refused by parents*
	- Dr. (Neurologist)	*- EEG (sleep-induced) within normal limits (Valium used to sedate child)*	*nil*	*-parents felt test was invalid because of child's violent reaction to valium. Neurologist disagreed strongly.*

FACILITY: *Hospital for Sick Children (cont'd.)*

DATE	NAME	DIAGNOSIS	TREATMENT	RESULTS
1983-84	*- Orthopaedic paediatrician*	*- hip not out of joint* *- good progress since tendon surgery*	*nil*	*nil*
	- Physiotherapist	*- poor muscle tone* *- some tightening of tendons*	*- home exercise program*	*- muscle tone improved*

FACILITY: *General Hospital*

DATE	NAME	DIAGNOSIS	TREATMENT	RESULTS
1980-84	*-Dr.*	*- see summary*		
1980-81	*-Mrs. (Psychometrist, Parent Child Clinic)*	*- hyperactivity - severe behavioral disorder - poor self image - acts out when rewarded*	*-daily behavior therapy sessions - parent counselling and support -parenting courses in behavior management -behavior modification program -parent relief 10 hr per week*	*- some improvement noted in behavior, but errati & inconsistent - communication and educational gains - improved family life*
	- Dr. (Psychiatrist, Parent Child Clinic)	*- as above*	*- behavior modification - parent counselling - parenting courses - drug therapy - child to be restrained and lock on bedroom door recommended*	*- extreme violence when restrained - eventually child jumpe out 2nd storey bedroom window when confined t bedroom*
1980-84	*- (Physiotherapists Handicapped Children's Centre)*	*- right side of body more involved than left - hamstrings & ankle tendons require daily tharapy & exercises*	*- developed specific program for child's physical disabilities - home exercise program set up - regular followup at HCC*	*- improved physically*

FACILITY: *General Hospital (Cont'd.)*

DATE	NAME	DIAGNOSIS	TREATMENT	RESULTS
1980-82	*- (Speech Pathologist)*	*- major improvement in language development* *- above average intelligence* *- questioned possible allergy to chocolate, etc.*	*- suggested modified Feingold diet*	*- some improvement in behavior with diet changes*
1981	*- Dr. (Speech Pathologist)*	*- significant communication delay*	*- continue at Parent Child Clinic*	*- no follow-up*
1982	*- (psychometrist)*	*- impulsive* *- controlling behavior* *- difficult behavior* *- erratic attention span* *- low average intelligence in some items, general average I.Q.*	*nil*	*nil*

FACILITY: *General Hospital*

DATE	NAME	DIAGNOSIS	TREATMENT	RESULTS
1980-84	*- Dr. (paediatrician)*	*- moderate hearing loss - mild spastic diplegia (C.P.) - minimal cerebral dysfunction of unknown origin - delayed language development - inattentive (on occasion) - impulsive behavior*	*- drug therapy: - mellaril - methylphenidate - ritalin - dilantin*	*- improved at first with each drug, then increase hyperactivity and violence after a few weeks on drug*
			- parent counselling	*- frustration for child, parents and siblings*
			- placement of child in behavioral nursery(June 1980)	*- child out of home half days - some parent relie*
			-physiotherapy	*- improved physically*
1981	*- Dr. (Paediatrician)*	*- making good progress physically and in language development*	*- continue in physiotherapy*	*- improved physically*
1980-82	*- Dr. (Orthopaedic Paediatrician)*	*- queried previous diagnosis of cerebral palsy - ruled out cerebral palsy (1982)*	*- continue physiotherapy*	*- continued to improve physically*
1980-84	*- Dr. (ENT)*	*- bilateral sensori-neural hearing loss - noted severe behavioral disorder*	*- continue amplification*	*- awareness improved with auditory training*

FACILITY: *Other Doctors*

DATE	NAME	DIAGNOSIS	TREATMENT	RESULTS
1980	*- Dr. Paediatric Neurologist*	*- developmental delay - delayed milestones - I.Q. 50 - 70 - Left hemisphere brain damage affecting right eye, ear and motor function - facial assymetry*	*nil*	*- frustration for parents*
Dec. 1981	*Dr. (G.P.,)*	*- called to child's home to sedate violent child, folowing painting of interior of home (family doctor out of town) - child completely out of control - violent*	*- increased medication dosage (mellaril)*	*- some improvement at the time - no long-term improvement*
Dec. 1982	*- Dr. Psychologist*	*- at least average intellectual ability - academically advanced for hearing impaired child of her C.A.*	*nil*	*- parents' estimate of intellectual ability confirmed*
July 1983	*- Dr. (Paediatrician)*	*- behavioral disorder*	*- drug therapy (stelazine) - parents to take parenting course re behavior management*	*- symptoms worse on drug - frustraion and depressio for parents*

FACILITY: *Family Doctor*

DATE	NAME	DIAGNOSIS	TREATMENT	RESULTS
1979 - present	*- Dr. ( )*	*- hyperkinetic - influenced adversely by certain dietary items - suspected allergies/sensetivities*	*- referred to numerous specialists - natural diet - no drugs (Depakene tried for suspected seizures) -continued support & encouragement to family - referred child to Dr. (Clinical Ecologist - Toronto - 1983*	*- frustration at no answers from specialists - immediate change with diet - child became patient of DR. (1983)*

Telephone

M.D.
R.R. 1
ONTARIO

February 15, 1985

Re:

This note attempts to describe concisely the medical problems that this eight year old adopted girl and her adoptive parents have had to contend with since her arrival in the home in 1980. We are not dealing with inexperienced parents and we are fortunately helping a well intentioned child with an increasingly commonly diagnosed sensitivity problem.

was a multi-handicapped child on arrival in the home. The parents have gradually recognized obscure talents that seem to invalidate partially or completely her diagnostic labels. The one most difficult problem is very disruptive in that she has sudden changes of behaviour that are violent. Normal sedative techniques for hyperkinetic children have totally failed here. Therefore a clinical ecologist has been brought into the picture the last two years with amazing results. He has been able to desensitize by sublingual drops in dramatic fashion.

This presents at least two problems for the medical profession generally. We dont understand the scientific basis of this treatment and we don't comprehend the magnitude of the disease in individual patients let alone the incidence in our whole population. The patients and their families usually have great difficulty avoiding their sensitizing substances especially when new ones develop and the cost in time, money and effort is overwhelming.

is a perfect illustration of what I have heretofore described. All of us are more or less affected by our environment.

Yours truly

WFB/gf

M.D.

Autumn, 1983 - was referred to Dr. , Clinical Ecologist, Toronto, by family doctor, DR. .

Sublingual testing indicated severe allergies to 37 different phenolic food compounds, chemicals, and inhalents. Reactions to these substances (which included at least 75% of all foods) were manifested in brain reactions leading to uncontrolled behavior, learning disabilities, and hyperactivity.

was put on a 4-day rotation diet with elimination of foods to which she reacted most severely, along with serums administered three times daily sublingually.

Because of sensitivity to chemicals and inhalents commonly found in the home, cleaning solutions, sprays, insecticides, etc. had to be removed from the home. A special natural cotton fibre matress without fire retardent (to which - is allergic) had to be purchased to replace her "non-allergenic" foam mattress, which emitted formaldehyde gasses on contact with body heat.

could no longer be taken to places where she would be exposed to natural gas heating, tobacco smoke, fresh paint, chemicals, deodorizers, etc. When exposed to these substances, she became violent, self-abusive, and uncontrollable. Administration of the appropriate serums generally neutralized these reactions within fifteen minutes. However, with continued exposure, reactions returned when the serum wore off, and subsequent reactions were more intense each time. Consequently, had to be eventually removed from her school, where she was constantly exposed to natural gas heat, cleaning solutions, pesticides, etc., although the local school board administration had been informed of her condition and the consequences of such exposure. Excellent cooperation and understanding was obtained from the school principal and teaching staff, and the superintendent of education, but no cooperation whatsoever was evident from the Board of Education, although an appeal was made formally, in writing.

When has a reaction, we have learned to "play detective", surveying the environment for the offending substance, then administering the appropriate serum to counteract the suspected allergen (e.g. if someone wearing perfume enters a room near , her reaction is countered by the administration of "synthetic ethyl alcohol" drops.

When there is a reaction that is very extreme, must be given oxygen for ten to fifteen minutes.

With the combination of desensitization serums, controlled environment, and diet, and our entire family are now able to lead relatively normal lives. Without the serums, future would be institutionalization for violent and uncontrollable behavior. Prior to our involvement with Dr. , our family was under extreme stress because of violent and unpredictable behaviors. We had reached our limits, and were at the point of adoption and family breakdown.

A CHILD WITH ENVIRONMENTAL HYPERSENSITIVITY

We are most anxious to present the following material about our daughter, , to the Committee studying Environmental Hypersensitivity.

We have a daughter named , who just celebrated her eighth birthday in January. She joined our family five years ago as a foster child. We were given to understand that her mother was a single parent who could not cope with a handicapped child. The handicaps were said to be deafness and, supposedly, minimal cerebral palsy. We learned very quickly that there was more to problem than that! At the time we had four other children, one of whom was deaf, and presented problems that far exceeded any we had ever encountered with all of our other children.

Thus began a long line of involvements with medical doctors, audiologists, psychologists and psychiatrists. Everyone agreed that was hearing impaired, although it was difficult to determine the severity of the loss because it was impossible to obtain an accurate hearing test. could not sit still. She was constantly on the move. At times she could not be confined in a room, let alone to a chair. She had been diagnosed as everything from "developmentally delayed" to "mentally retarded". Yet, she had occasional quiet times when she appeard to be a caring, intelligent child. However, these times were rare. Mostly we saw activity so exhausting that her mother lost twenty pounds the first year in trying to keep up with her. She slept for only a few hours, at the most, at night, and spent the majority of the time running through the house, yelling in a dreadful voice. Our entire family became exhausted in trying to cope with her. We discussed with our children the possibility of giving her up, but they refused. In fact, one of our natural children said,"If she goes, I go with her." Our children "hung in" when we no longer felt we were able to do so. was not easy to love, but was hard to give up on. Eventually was so much a part of our family that we adopted her.

As a certified teacher of the deaf, mother worked with her on a preschool program for hearing impaired children, and caught glimpses of what appeared to be considerable intelligence. Yet, seldom had we seen a child with so much difficulty concentrating. No language, other than our names, came during that first year with us. She had a vocabulary of only six words when she first arrived. Yet, she appeared to learn in other ways. She quickly learned to match pictures to objects or other pictures. She could "figure out" ways to solve problems, and loved to work with building sets and difficult puzzles. Then, her mother, who was with her all day long, began to notice what appeared to be complete sentences that were all run together, such as "Don'twanna" and "Notgonnadodat." No one else paid much attention to these observations until one day, when we were all travelling in the car, and we all heard say, "Mummy, gimme back my hat and mitts." Once we realized that the language was going in, we all began to bombard her with language through sign language and speech. The sign language was like a bridge. Words flowed into sentences, and could not seem to get enough. Within the next year, learned to read and write simple language. (Not a bad accomplishment at age four, for a child who had been diagnosed by a pediatric neurologist as having an I.Q. of 50 to 70).

By age four and one half, began school in a deaf kindergarten at School, a Ministry of Education residential school for the hearing impaired, as a day student. She was in advance of her classmates in speech, language and sign language skills. By the end of her first year in school, it was recommended that be involved in a program for normal hearing children, as she seemed to be learning more as a hearing child, in spite of her hearing loss. By this time, we had confirmed by brainstem electrical response audiometry, that han no hearing in her right ear, and a severe to profound loss in her left ear. Yet, her progress, with the exception of in the area of behavior, had been consistently upward.

We had been advised to take every parenting course available, to teach us parenting skills which we supposedly lacked, to deal with our daughter. At first we followed this advice. Gradually, we began to realize that none of these courses helped us very much with because she had very little control over her own body. We tried drug therapy - mellaril, methylphenidate, ritalin, depakene, dilantin, and stellazine, all prescribed by paediatricians or psychiatrists. In most cases, these drugs worked briefly, then made her even more hyperactive than she had been before. At some times she became verbally abusive and violent, at other times, she was depressed.

We then began to experiment with the elimination of some foods from her diet. We had learned that chocolate and McDonald's orange drink brought on terrible reactions. Finally our family doctor, who had been most supportive, and also baffled about this child, suggested that we try feeding her only a very basic diet of meat, potatoes, fruit and vegetables, with no processed foods, from a box or a package. Within twenty-four hours we noticed that we had a different child. However, there were still problems with extreme behaviors at times. We then tried the Feingold Diet, but were not completely satisfied with the results. A friend supplied us with a list of natural foods that posed possible problems for allergy victims, and we were able to pinpoint a few more foods that were potentially dangerous for . But, we knew that we were still missing some important factors.

Prior to beginning kindergarten, had attended a special nursery program for children with behavioral problems. We had been told to sit on a chair when she became our of control. This, of course, was ridiculous, because one could not confine her on a chair for a few seconds, if one could even catch her! The psychiatrist who was the director of the nursery finally told us to put a lock on the outside of bedroom door, and isolate her there for brief periods when she became uncontrollable. It took over a year for us to reach the point where we could lock her in her room, because we thought is was too extreme. We had never had to use such techniques with any of our other children, and it upset us a great deal. However, we had all reached the point that we were afraid that we might abuse her physically, so, in despiration, we resorted to locking her into her room. We checked her every few minutes. In five minutes she could dismantle an entire room. The end result of her confinement to her room was that she jumped through a second storey window, through the glass, and landed on concrete sixteen feet below. Our doctor was at the house in minutes. But, strangely enough, had no broken bones or cuts or bruises. However, that episode left deep emotional scars on the rest of the family. Our doctor sat with us as we cried, "We can't live like this any longer." He encouraged us by saying, "Yes, you can. You have taught me that you have to live one day at a time with a child like this. Put plexiglass and bars on the window, and we will go back and study the diet, and we will find the problem." And we did just that. Later, ecological testing by Dr. , indicated that was allergic to most grains. had had new "all natural" vitamins the morning she jumped through the window. Our vitamins were natural, but packed with fillers - corn, wheat, and yeast.

We began to tune in to chemical factors and inhalants as things that affected when we stripped and urethaned our front door. It was summer, and the door was open into the house. behavior became uncontrollable for days after the urethaning. In retrospect, we recalled having to have a doctor come to the house to try to sedate when we had painted our living room and hall. Then we realized that there had been similar reactions when we had redecorated other rooms in the house. Testing has now confirmed that is severly allergic to formaldehyde, whic is in most plastics and many building materials, and to paints (particularly oil based paints which can "gas off" for six months).

We began a search for someone to help us and . We knew that her chemical system was out of balance, and that somehow she could not tolerate many of the things present in our environment. Finally, we stumbled upon a book entitled "Allergies and the Hyperactive Child" by Dr. Doris Rapp, at a conference sponsored by The Ontario Association for Children with Learning Disabilities. Reading this book, we became convinced that the field of Clinical Ecology had some answers about our . Our family doctor read the book, and agreed. We were considering travelling to Buffalo, New York, to see Doctor Rapp, when we heard about two clinical ecologists in Toronto. Our family doctor referred us to Dr. , in Toronto.

At the same time we were involved with The Hospital for Sick Children, in Toronto, on a monthly basis for assessments regarding . Dr. , at that facility, assessed using nonverbal testing tools, and confirmed our suspicions that she was a child of above average intelligence. Dr. a psychiatrist on the team assessing , was most understanding, but could only offer us more behavior modification programming for , and a drug therapy program. He agreed, rather skeptically, that allergies might be a factor, but admitted that that was a field unfamiliar to him. Dr. , a neurologist at HSC, also saw at this time, and prescribed a sleep induced EEG. We had a great deal of difficulty locating a sedative at the hospital which did not have artificial food coloring or artificial flavour, both of which adversely affect her, and make her hyperactive. Finally, Valium was used to sedate her. The valium had a strange effect on . She never did go to sleep. She became very upset and weepy. She was overly active, but her body was beyond her control, not unlike an intoxicated person. We queried how one would be able to obtain an accurate EEG when the child's body was so out of control, reacting as it was, but were told that the medication did not affect her brain. We were now at the point that we were not prepared to waste time with such outright stupidity any longer. The way was reacting indicated clearly that her entire neurological system was out of control. These so-called experts had not tried to live with a child who has to be confined in a straight jacket after drinking apple juice, or who had jumped through a window after taking one vitamin pill. Nor had they tried to restrain her in a car, following a valium reaction. We had had enough of traditional medicine.

During the first day of sublingual testing in Dr. office, we saw all of the symptoms we had been experiencing for years, which had been so often described as "psychological" and "behavioral" disorders, induced by administering small doses of substances to which she was allergic. reacted to wheat by throwing a wooden chair against the wall in the doctor's office with such force that it left a hole in the palster. She became verbally abusive and spit at people with exposure to onions. She became completely uncontrollable and violent when exposed to many foods, as well as environmental items such as natural gas, chlorine, alcohol, perfumes, formaldehyde, molds, and numerous other chemicals and inhalants. We wept when we recalled the numerous times she had been restrained with a straight jacket, or had been disciplined for her unacceptable behavior. We wept recalling all the "marvellous" advice given to us by professional people who are ignorantly functionning ten years behind the times, and who refuse to listen to what the field of clinical ecology has to offer to people such as our daughter. We are angered by their reluctance to learn more about this field. And, we wept most, for all the time we had wasted in a little girl's life.

For the first time we saw a light at the end of the tunnel. When reacted to something, a desensitizing serum was immediately developed, a tolerance level was established, and, within minutes, she could be restored to a calm, reasonable child, the side of we had rarely ever seen. The first time the desensitizing serum made so quiet that she actually sat on her mother's knee, and let her hold her in her arms. The technicians asked whether that was normal for when she was not having a reaction, so they could adjust the serum appropriately, and we had to say that we did not know what was normal for . We asked them to just let us hold her for a while, because she nad never sat and cuddled before.

Needless to say, behavior has altered drastically over the past two years. With her serums and a four-day rotation diet, eliminating all processed and artificial foods, we have seen steady progress. We certainly cannot say that we no longer encounter problems with , but we can say that when we do, there are solutions to the problems now. We had the most enjoyable summer vacation since arrived this past summer. sleeps all night now, sometimes until nine in the morning. She was able to take swimming lessons this summer, and passed her first two levels. Previous years she attempted but would not cooperate. We know now that she is allergic to the chlorine in the water, but, with her serum for chlorine, she is able to tolerate the chlorinated water for about an hour. is now able to attend Brownies, and has even gone to Brownie Camp (with her own specially prepared food sent along, of course!).

Our home is different from most in that we have had to eliminate all chemicals. We clean only with "safe" products. We cannot use sprays, chemicals, insecticides or pesticides. We can paint only with latex or alkyd paints, and must do so only in the summer, when adequate ventilation is possible. has to sleep on a specially made mattress, which required a prescription from the doctor, stating that it was not to be treated with chemical fire retardents, as our legislation dictates that all mattresses must be treated. It will be necessary for us to purchase two more of these mattresses because shares a room with her two sisters, and the chemicals seep into the air. But, they are expensive, and will have to be acquired gradually. Our heating system has been converted to electricity. We try to purchase organic foods for , but it is not always available in our area. However, her serums help her to tolerate some of the foods she could not eat before. Much of food comes from a Health Food store, so it is expensive. If has to be taken to the hospital for stitches, or some similar treatment, it is necessary for us to carry zepherin, which is a substitute for alcohol, because has a severe alcohol allergy. We also must travel with an oxygen tank, equipped with a special non-plastic hose and a ceramic mask, because is allergic to the conventional plastic hose and mask, which contain formaldehyde, which system cannot tolerate. The ceramic masks are hand-made, and quite expensive. They are often smashed in our struggles to administer the oxygen when has an overly severe reaction.But, they are a necessary part of life with because of the chemicals and substances that are toxic to her in her everyday life. serums are also expensive, usually three to four hundred dollars per month, but nor we are able to live without them. Without her serums, would now be confined to and institution.

has become so used to the four-day rotation diet that she rarely deviates from it, even when we are not around to guide her in her choices of foods. She knows what foods will make her "run and yell". She does not complain about her serums, which must be administered three times daily, and usually goes straight to the refrigerator after her meals and gets them because she knows that lifee is unpleasant without them. She considers it a real treat to be able to eat some of the foods she could not have before the serums. She feels that she is lucky, because she can have a birthday cake, and her young friend, Daniel, who has similar allergies, cannot. To her, things are so much better than they were. The straight jacket, the lock on the door, and the bars on the window are gone.

The one area where still struggles is at school. Her problems there are not academic, but are environmental. made such academic progress in the past few years that she became part of a class of three little girls to integrate into a public school, with a teacher of the deaf assisting them. The girls completed grades one and two, and moved into grade three this year. However, The Board of Education converted all of their schools to natural gas heat over the summer. When we heard of the pending conversion to natural gas last year, we expressed our concern to the Superintendent of Special Education. We were informed that the move was an economic one, and that nothing could be done. Since mid-September, we have been struggling to keep in an environment that she cannot tolerate by having serums developed to counteract her reactions to the gas, which are extremely violent. She began to develop migrane headaches and seizure-like states at times, as well as the usual behavioral reactions. We finally were forced to withdraw from school by late September. Her mother tutored her at home for six weeks. At the beginning of November, returned to school, and had a few days in which she appeared to be making progress. Then, on November 16th, as her mother was picking up at the school at 2:45, she noticed a man in a Pest Control uniform, carry a spray can into the school. He was obviously about to treat the building with a pesticide or an insecticide. Knowing that either of these chemicals were potentially hazardous to , and probably other children in the school who had not yet been dismissed, she went to the office to alert to principal, who was not there. The principal and the Superintendent of Special Education had both received letters from Dr. , stating that was not to be exposed to chemicals, pesticides, insecticides or paints. In the principal's absence, mother asked one of the staff to detain the man while she went to the office of the Board of Education. By the time someone from the board office was able to contact the man, the school had been sprayed, with all the students, with the exception of class who are dismissed early, in the school. This action is contrary to the guidelines, as we interpret them, and is dangerous to both the staff and students in the building. These events took place on a Friday afternoon.

On Monday morning, returned to school and immediately became uncontrollable. She had to be removed from the school and taken home because her serums did not neutralize her reactions. was returned to school on Monday afternoon, with the same results. On the Tuesday went to Toronto for her monthly appointment with Dr. . Dr. was so concerned with the deterioration in that he sent blood samples by air courier to New Orleans for pesticide screening. Three pesticides were found to be in her blood. Both Dr. and our family doctor told us that there should be no pesticides in one's blood. was immediately put on a program to attempt to flush the pesticides from her system. Within twenty-four hours of her original exposure to the pesticides, new allergies appeared to have developed. She now reacted to tobacco smoke and several foods which she had tolerated previously.She had a more severe reaction to exposure to perfumes and chemicals, and even reacted to photocopied papers and print in some books. Testing for these substances confirmed that she now, indeed, was allergic to them. Both Dr. and our family doctor felt that the exposure to the pesticides had led to an immune system dysregulation. We are now suspicious that violent reactions in September might well also have been a result of pesticide exposure in the school. We have learned that the school was also sprayed in September, but no date was divulged to us. It would appear that reaction to the natural gas is exaggerated by pesticide exposure, as are many of her allergies. After the November episode, was unable to return to the school until January. She spent that period of time at home with tutorial programmes being carried on by her mother and several tutors. One tutor had to be terminated becuase of reactions to the cigarette smoke on her clothing. We actually demonstrated this reaction by having the tutor smoke a cigarette in the room with present. The reaction was so violent that ended up banging her head on the floor, with her entire body completely out of control. Several witnesses were present to confirm the reaction. Administration of serum and removal to the fresh air outdoors restored to her former self. However, she was unable to continue with this tutor. The whole episode was most upsetting because testing in the autumn indicated that was not allergic to tobacco smoke. She had deveolped one more new allergy.

Since the beginning of January, we have tried to return to school repeatedly. The principal and the staff of her school have been most understanding and caring. The Superintendent of Special Education has attempted to help. An air filtering machine was installed in her classroom. This has not been of any benefit to her. She simply is unable to tolerate the environment in her school, beyond one or two hours at the most, apparently because the natural gas accumulates in her system. This is complicated because of the chemicals used in cleaning and disinfecting the school building. The principal counted no less than twenty-one different chemicals in the custodian's storeroom.

also has a problem with exposure to paints. When we discovered that some painting was to be done in the school in the fall, we approached the administration and asked that it not be done until summer vacation. They cooperated. However, during the Christmas vacation some well-intentioned employee took it upon himself to have the painting done, with oil based paint, which gasses off for up to six months. This added to already serious problems with the school environment. When she returned in January to the natural gas, oil based paint and cleaning chemicals, already having a damaged immune system from exposure to pesticides, we knew that there was no hope for her survival in that environemnt.

For the past month has been attending classes back at , with some success. Her placement is not the optimum for her academically in that she has been put into a class of children much older than she because of her advanced *speech and language skills. She currently spends some time each day with a class of children more her age for mathematics and socialization skills. The situation is less than ideal for , but it does enable her to attend school, which she desparately wants to do.*

Under the terms of Bill 82, our daughter is entitled to attend an educational program which meets her needs. What does one do when that program is in an environment that threatens her life? We have fought for our daughter for five years and we will continue to fight to make her environment safe because she must fight every day just to live. Unless we can do something about our polluted environment, each succeeding generation will produce even more

Associate Professor
(Paediatric Orthopaedics)

Queen's University
Richardson House
102 Stuart St.
Kingston, Ontario
K7L 3N6
Tel.

Dear

Paed. Ortho. Clinic
May 27, 1980

I have just seen in clinic. As you know, this child was thought to have a mild degree of Cerebral Palsy, as well as deafness and hyper activity.

I understand that you are investigating this child and the child will probably be followed through the Centre for a while anyway.

From my point of view I do not think that this child has anything in the way of active reflexes and I wonder if the child did not infact have idiopathic tight heel cord and perhaps has a very mild degree of Cerebr Palsy underlying. The only thing that I can find on physical examination today is a slight tendency to hip tightness.

I understand that the hips have been x-rayed recently in Toronto. I would suggest, however, that this child have an x-ray of th hips sometime between the age of 4 and 5.

I do not believe that I need to follow this ch but will be happy to see her again with you in the Regional Centre should anything further transpire.

Sincerely yours,

/

This letter from a severely ill patient
has been typed to ensure legibility after
reproduction.

July 11, 1980

Social Worker, Adoption Service
Children's Aid Society
15 Huntley Street
Toronto, Ontario

Dear Mrs.

Re: ______________________

has been attending our therapeutic nursery for a period of assessment since June 9. Today, we will be having a staff case conference to review our findings, e.g., the strengths observed, and the problems, and to develop a treatment plan. When that conference is written up a copy will be sent to you. However, there is an immediate and pressing concern that prompts this letter.

This child is an extremely demanding and strong-willed child. Certainly, she does have several medical problems (hearing loss, cerebral palsy, hyperactivity, possible aphasia) but these are relatively manageable, compared to her behaviour disorder which manifests itself by defiance and long periods of screaming. mother is an extremely capable and skilled parent as well as teacher , but it seems virtually her last drop of energy has been drained by this child. The entire family has been under stress due to behaviour, and yet they are all fond of and attached to . They do not want this adoption to break down and yet they have seriously considered that it may come to that.

Mr. and Mrs. are fortunate to have a supportive group of friends, and as you know did leave with another foster mother, and the other children with relatives to take a holiday. It is unfortunate they could not have taken more time as they are both exhausted. I am especially concerned about Mrs. who is looking very pale, thin and drawn.

This family impresses me with all the strengths it has and seems an ideal family for . But they most urgently need more support than we as an agency can provide to get through the next few weeks or months.

Will return to our nursery in September. In the meantime, we will be available to the parents for emotional support and counselling. But in-home assistance is needed on a daily basis. As I mentioned to you on the telephone , a behavioural science graduate who has been trained in our program is available for 10-12 hours per week. Hopefully your agency will be able to make an arrangement with her.

Thank you for whatever assistance you can provide.

Yours truly
Coordinator, Parent-Child Clinic

This letter has been typed to ensure
legibility following reproduction.
Elements of identification have been
deleted to preserve confidentiality.

----------, M.D.
RR 1
--------, Ontario

September 31, 1982 (sic)

To whom it may concern:

Miss ----------- is hyperkinetic which is influenced adversely by certain dietary items. She should not have food from cans, or pre-prepared food of any kind. Caffeine and chocolate must be absolutely avoided.

Yours truly,

Copies to: Infirmary

PROFESSIONALS REQUIRING CLARIFICATION OF PSYCHOLOGICAL TEST RESULTS REPORTED HEREIN SHOULD CONTACT THE AUTHOR OF THIS REPORT

THE HOSPITAL FOR SICK CHILDREN
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Department of Paediatrics,
Division of Neurology,

CHILD DEVELOPMENT CLINIC
DEVELOPMENTAL EVALUATION UNIT
DIRECT DIAL (416) 598-6308

PSYCHOLOGY ASSESSMENT

CONFIDENTIAL

NAME:

D.O.B.: 13.1.77

AGE: 6 years 6 months

DATE SEEN: July 5, 1983

HSC#: 1077411

REASON FOR ASSESSMENT: Re-evaluation of intellectual functioning and assessment of behavioural difficulties.

Assessment Tools:

Alpern Bols Developmental Profile
Wide Range Achievement Test
Leiter International Performance Scale
Beery Test of Visual Motor Integration

Background History:

was adopted by the family and has been living with them since December 1979. When she arrived she was delayed in her development, had six words and was very difficult to handle. Since that time with a good deal of patience and expertise, has improved greatly. She has presently completed a grade one integrated program run by the school for the deaf (is completely deaf in one ear and has hearing from the other ear with the use of a hearing aid) in in association with a neighborhood school. Plans are for to enter grade 2 on a similar basis in September 1983. attention span and self control have improved. In her interaction with others, she has occasional aggressive episodes which are of concern both at home and at school. It is these aggressive, out of control episodes that have brought the family to HSC for re-evaluation. When enters into one of her out of control episodes, according to her teacher she will be overly active, has difficulty staying seated and appears to be "driven" by a motor. She will frequently interrupt other childrens' activities and becomes quite bossy. At these times she needs a great deal of supervision. Once becomes controlled again she is a different person - is quite cooperative, anxious to please and attentive. At home, Mr. and Mrs. describe in a similar manner. She can have very good days and at other times have very bad ones. On a bad day, it is very difficult to help her to wind down and control herself. At one point jumped out the window of her bedroom, the window was then boarded up and there is a fear that may not have the impulse control to prevent herself from trying it again. In fact, when her parents go to put her in her room, as a withdrawal approach,

Continued .....

they say she threatens that she will go out the window again. An attempt is being made presently to control hyperactivity through control of her diet. Previous attempts have been made to use medications such as Ritalin and Depakene. Ritalin worked for a short time but then seemed to wane. Depakene was not used for any length of time and so it is unclear whether it was successful or not. At present a series of assessments will be done including a psychological assessment, psychiatric consultation, a neurological assessment and orthopedics and physiotherapy assessment. Mr. and Mrs. are concerned as to whether sudden outbursts and change of temperament are neurologically based.

Behaviour on Assessment:
While parents were being briefly interviewed played quietly with toys and games that were offered to her. It was obvious however that she did not enjoy conversation taking place about her and her difficulties and therefore this was stopped. At a later point in time, the were interviewed individually, away from . During formal assessment, exhibited a high degree of activity. She tends to work impulsively and works very quickly. About half way through the assessment became pouty and wanted to stop. When the examiner was firm and encouraging her, seemed to settle down and continued. shows a good degree of strength in her ability to handle academic work. She seemed to truly enjoy doing things well. She however seems quite hard on herself when she finds things too difficult. Her first move is to avoid something that is too difficult but when encouraged she is pleased. It was also noted that enjoys taking control of new situations that she is in. She immediately tests and wants to determine if she can control the adult that she is with. Once she determines that she cannot control the situation, settles down and can become compliant.

Assessment Results:
Although in the past when was younger there was some concern as to whether she would remain to be a delayed child it is quite evident from this testing session that she is a child with intelligence well within the average range. On the Leiter International Performance Scale, passes all items at the 5 year level, all at the 6 year level and several at the 7 year level, 1 at the 8 year level and 1 at the 10 year level. is able to apply analogous reasoning. She is able to judge mass and volume. She is able to classify objects appropriately. At times speed and impulsivity get in the way of correctness and once the task becomes too lengthy, she quits. overall score on the Leiter is a score with an MA equivalency of 7 years.

On testing of visual motor integration, it is noted that she uses her right hand in printing and although she exhibits a mild delay in the Beery, scoring at a 5 year 7 month level, does not seem to have any problems in the area of printing of letters. In fact, letter formation is actually above her age level.

On testing using the Wide Range Achievement Test, scores well within normal limits. In fact, her scores are above grade level expectations. was born in January and technically should be functioning in readiness for grade one. However she was placed in a grade 1 program last year due to the fact that she was able to read at that time. This appears to have been a wise decision and has made good progress in grade 1 materials particularly in reading and spelling. On the spelling subtest in the WRAT scores with a grade rating of 2.2. In reading, she scores

Continued .....

with a grade rating of 2.5. shows more difficulty in the area of arithmetic skills. Her scores are at a grade 1.1 level. has difficulty when oral problem solving is required. This again is a task in which language processing weaknesses limit expression of her potential. As well, appears to exhibit much more of a shorter attention span when dealing with arithmetic. She is far less comfortable working on arithmetic questions, particularly when they are rooted in an oral framework. particularly enjoys manipulative games and appears to be quite patient when mathematical concepts are dealt with in a concrete way.

Summary and Recommendations:

In summary then, at age 6 years 5 months with a past history of developmental delay and hearing loss has made incredible progress. is able to read and spell in readiness for a grade 2 curriculum. Her math skills are at a grade 1 level. Overall intellectually is functioning well within the average range of intelligence. , due to her deafness, exhibits an expressive language weakness which is not uncommon to other children who are also deaf. She also has been found to have language processing difficulties. This weakness has made her progress on oral math more difficult. appears to have difficulty with impulse control. She works quickly when allowed to and needs a firm approach to keep her on task and working in a calm manner. Although has made gains she still appears to have little self confidence and will often manipulate the situation so that she does not have to try tasks that are too difficult.

It seems quite appropriate for to continue in the integrated program that she has been in with an eye to full integration when possible. In examination of behavioural pattern, in consultation with Dr. , it would seem that a strict behaviour management approach is one of the options that still must be pursued with . is a child who can test to the limits and it is often difficult with a child like this to feel that one is making progress. It is however doubly important that behavioural firmness and consistency continue despite what her parents may feel are obvious setbacks in her behaviour. It is recommended that see Dr. , a neurologist at HSC to further determine whether sudden changes of temperament and outbursts of temper are rooted in a neurological problem. Mr. and Mrs. are attempting to further delineate whether allergies may be at the root of some of hyperactivity. It is hoped that at the end of assessment at HSC that some clear decisions can be made on the type of medication if any that would be appropriate to continue as well as whether further behavioural consultation out in the area will be necessary.

Developmental Psychologist

bz

NAME:

ADDRESS:

PHONE:

AGE 6 years (D.O.B. 23-03-79)

OCCUPATION: Student (School)

SEX: Female

BACKGROUND: joined our family in July, 1982. She is Micmac Indian, born in Prince Edward Island. At birth, was addicted to alcohol, both natural parents being alcoholics. We were approached by the Family and Children's Services Department of and asked to consider adopting because she had been diagnosed as aphasic at Isaac Waltham Kilam Hospital in Halifax, Nova Scotia, and it had been recommended that she be placed in a province where educational facilities for such children are available. Ontario is the only province with formal programming for aphasic children. It happened, coincidentally, that is the program coordinator of the School, the provincial school for aphasic children run by the Ontario Ministry of Education. This was unknown to the authorities when we were approached.

behavior is not as severe as , but she has considerable difficulty attending and sitting still. When she first came, she was constantly on the move, often leaving a trail of broken or damaged things behind her. At times she was heedless of her own safety, and her judgement seemed to be out of proportion. For example, on one occasion, dove off a climbing apparatus and twisted her neck so badly that she required regular chiropractic treatments for several months. A subsequent leap from the same apparatus resulted in a broken collarbone. One week later, she walked into a swing and shattered the same bone, and had to wear a cast until it healed. She has also ridden a bicycle full force into trees and hydro poles. Once she completely demolished a bicycle, but was herself unhurt, with the exception of a few scratches and bruises.

When we attempted to work on preschool language programs with , she enjoyed the work, but had a great deal of difficulty attending, for any length of time. She was unable to sit still, and her hands were constantly "into things". She was easily discouraged and weepy when she was unable to concentrate and achieve. Retention is one of the areas where has the most difficulty. Since she is an extremely intelligent little girl, she finds this to be very frustrating.

Regarding diet, we discovered in a very short time that could not tolerate foods such as Jello, which is heavy in food coloring, artificial flavouring and sugar, without becoming hyperactive and uncooperative.

We did not waste time with traditional medicine regarding problems since we had already been through that frustrating exercise with . We arranged for ecological testing for her in the summer of 1984. She has been discovered to have twenty-nine specific allergies to phenolic food compounds, chemicals and inhalants, although her reactions to these substances are not nearly as dramatic as those of her sister, . Consequently, follows the four-day rotation diet, eliminating the greatest offenders completely. She is also taking the sublingual allergy serum three times daily. These interventions have made a dramatic difference in behavior and cooperation. also is affected by exposure to natural gas. On exposure, she was noted to become silly and boistrous, and eventually uncontrollable, if not removed. Upon testing, it was discovered that her allergy to natural gas is more severe than 's. With her serum, she is able to tolerate brief exposures to gas-heated buildings. However, there are implications for educational future. Since the serum program began and diet has been strictly controlled, she has made considerable academic progress, and it has been predicted that she will be able to integrate into a regular school within the next two years. The problem exists that all of the public schools in our city have been converted to natural gas heat, and cannot tolerate exposure to gas for extended periods of time, with symptoms becoming worse with repeated exposures. She will not be able to attend a school with gas heat. Therefore, she will likely be forced to continue in a special education program at School, and be held back in her educational career.

, today, is a much happier child, satisfied that she can achieve, and is a good student. We no longer have the disasters we used to face almost daily with her, although, exposure to some of her most severe allergens such as alcohol or yeast trigger some of the former behaviors. Foods high in sugar content or food coloring also can cause a similar reaction, so she must avoid them. She does not appear to have the cravings that used to have, so her adjustment to the diet was not traumatic.

allergies are such that it is hoped that one day she will be able to exiat without the serums, and simply watch her diet.

FOUR-DAY ROTATION DIET

In order to assist persons with food allergies to develop tolerance to certain foods a four-day rotation diet has been developed.

Our two daughters have been placed on the four-day rotation diet, with noticeable positive results. However, there have been some problems with having the diet followed at The School, a residential school operated by the Ontario Ministry of Education. The diet, which has been prescribed by Dr. , a medical doctor and clinical ecologist, for our daughters and six other children at the school (some being students at School, which shares dietary facilities), and was submitted, in writing, in December, is not being followed by the food services contract company. It has, apparently been forwarded to the Medical Association for approval. The children are all on the diet at home, but must be on it seven days a week if it is to be effective. We have been forced to send our child's lunches to school with her. Other parents, however, do not have that option, since their children are residential students, living at the school at least five days per week.

We are concerned with the lack of cooperation, and narrow-mindedness of the school medical staff, dietary staff, and traditionalists who do not understand the value, and necessity of such a diet. We have seen such positive effects at home with these children, but lose ground when they return to the school.

Is there no justice for these unfortunate children who suffer from food allergies in our society?

COST TO THE FAMILY : (for two children, , suffering
from environmental illness)

Testing	$ 16.00
Drops (serum)	450.00 - 600.00
Special Foods (natural)	150.00
Vitamins	40.00
Oxygen	20.00
Travel (for testing)	75.00
Total monthly cost	$ 750.00 to 900.00

Additional once-only expenditures:

Special cotton mattress	$ 150.00 each
Electric Heating System	$ 1600.00 (rebate of $800.00 received)

Projected once-only expenditures:

Water purifying system	$1000.00
Air filter system	$1000.00

Note: Expenses for serums, vitamins and oxygen were covered by Great-West Life group insurance plan at father's place of employment. However, the insurance company has witheld payment since December, 1984, placing excessive financial strain on the family.

SUGGESTIONS:

1. *Recognition and acceptance of Clinical Ecology by the Canadian Medical Association.*

2. *Coverage of ecological and allergy testing by OHIP.*

3. *Coverage of serum costs by OHIP or group insurance plans.*

4. *Environmentally safe areas in hospitals, under the supervision of a Clinical Ecologist (i.e. free of chemicals, disinfectants, insecticides, pesticides, alcohol, natural gas, etc.).*

5. *Environmentally safe schools (as for hospitals).*

6. *Stricter controls re use of pesticides and insecticides, and other chemicals in our environment (e.g. public buildings, etc.)*

7. *Education of school boards, teachers, custodians, medical staff, and the public in general about this illness.*

February 8, 1985

Chairman,
The County Board of Education,

Ontario

Dear Mr.

As a concerned citizen, parent and taxpayer, I attended the January 28, 1985 meeting of the County Board of Education. It was a memorable experience. I left the meeting with a number of concerns, and became even more upset upon hearing the reports of the meeting over FM the following day.

It concerns me that a number of the questions asked by some of the trustees were never adequately addressed by the board. In several instances, a question or concern was presented by one trustee, only to have the topic of discussion changed by another.

I was extremely upset, and remain so, with the uncaring and flippant responses of some trustees to concerns expressed by Trustee regarding the painting and pesticide issues. I was one of those parents to whom Mrs. was referring, and feel personally insulted by some of the board members. I contacted you, by letter, on November 29, 1984, regarding the pesticide issue. To date receipt of that letter has never been acknowledged. However, my concerns are even stronger at the present time. Since writing to you, I have had a Chlorinated Pesticide Screening Test completed on a sample of my daughter's blood, at significant personal expense. Analysis of blood samples indicate the presence of three pesticides in her blood serum. My daughter has, since that time, had to undergo a lengthy detoxification program to rid her of those hazardous chemicals and, hopefully, restore her health. The existance of pesticides in her blood have contributed to an immune system dysregulation which, in turn, has caused her to become allergic or sensitive to numerous environmental factors and foods to which she was never sensitive in the past. As a result of her new sensitivities, she was able to attend school for only a few days of the fall term.

One of my daughter's most serious allergies at this time is natural gas. She cannot tolerate the atmosphere in a gas-heated building for any length of time. Because of the conversion of all schools to natural gas, no County Board school in our city is accessible for her.

At the board meeting of January 28th, Trustee suggested the postponement of conversion of the schools to gas until long term implications were explores. This suggestion was rejected with little discussion. It was made clear that the reason for conversion was financial. By investing $65,000.00 in the conversion program, $4,000.00 per year in energy costs would be saved. On returning home and completing some simple mathematical calculations, I noted that if that same $65,000.00 were invested at even ten percent with a local trust company, an annual profit of $6,500.00 would be realized. That is a $2,500.00 per year graeeter return on the original investment, and the principle would remain untouched. So, at the end of the first year, the sum on hand would total at least $71,500.00, as opposed to the $4,000.00 realized by the conversion. This appears, then, to be gross mismanagement of public funds, unless there is some explanation that was not discussed at the board meeting.

There is mounting evidence that natural gas heating systems can contribute to hyperactivity, learning disabilities, and medical symptoms such as headache, nausea, and sore throats in some children and adults.

Regarding the issue of the painting at Collegiate, you will recall that one of the trustees stated that he had met with the principal of the school, who had indicated that there were no problems among the staff or students at resulting from the paint fumes. In discussions with some of the teaching staff, office staff, students, parents, and a medical doctor regarding this issue, we discovered that either the principal was sadly misinformed, or that he had misinformed the trustee. In fact, one staff member was so ill during the period of the painting that he was unable to report to work on several days. Students, including my son, were suffering from nausea and headaches, and missed several days of school as a result. This was reported to the school. Some staff members also reported a deterioration of behavior, work habits, and productivity of students while the painting was being done on their particular floors.

One would assume from the media reports regarding the January, 1985 report of the board safety committee that trustees and the administration of the board had been thoroughly briefed on all aspects of this report. However, it was noted that some of the comments attributed to Trustee were neither mentioned at the meeting nor were they in the written report of his committee. Perhaps they were disclosed only to the media at the press conference prior to the board meeting. From the media reports, one would *surmise that steps are being taken to ensure that children with certain chemical and environmental sensitivities would be given consideration and not be exposed to these noxious toxic substances. Reference was made in the media to the odors from such common articles as magic markers and new carpeting. However, no mention was made of such concerns at the board meeting or in the written report. Are trustees being given the complete story? Or, do they even care to hear it? It would appear that they are making serious decisions and voting on issues, after being given only partial information. The impression one obtains is that our board of education is basically a forum for the "rubber stamp approval" of pre-determined decisions made by a powerful few.*

It concerns me greatly that more attention was devoted to the erection of a memorial cairn at Township Public School and to the interior decoration of the board room than to concerns that affect the children in our community.

It is interesting to note that the Board of Education for the City of Toronto, as one of the province's more progressive boards concerned with children with environmental illness, has hired a research firm to study the effects of our polluted school environments on education. The results of this study, to be released in April, 1985, could have serious implications for all school boards in our province, including the County Board. Why should County Board not be one of the province's progressive boards, rather than wait until legal action or legislation require adaptations and consideration for such children?

With continued concerns,

Yours sincerely,

cc to - Judge George M. Thompson,
Chairman, Environmental Hypersensitivity Review Committee

- Mrs. , Trustee, County Board of Education

FOUR DAY MEAL SCHEDULE

DAY 1 - Choose 1 item from each category

BREAKFASTS

1. Orange juice, grapefruit juice, coconut milk, banana orange drink
2. Orange, banana, grapefruit
3. Eggs - boiled, poached, scrambled (no milk)
4. Rice cakes, banana rice bread, puffed rice cereal with orange juice, banana/rice muffins, orange honey, rice flour/orange pancakes

LUNCHES

1. Chicken soup (chicken broth, rice, carrots, celery, parsley), turkey soup (as chicken soup), eggs (boiled, poached, scrambled), cold sliced chicken, cold sliced turkey, hard boiled eggs
2. Carrot sticks, celery sticks
3. Rice cakes, rice crackers, rice pizza
4. Banana, orange, grapefruit, tangerine, brazil nut balls
5. Orange juice, grapefruit juice, lime juice

SUPPERS

1. Roast chicken, roast turkey, broiled chicken (legs)
2. Brown rice (white rice)
3. Boiled carrots, boiled parsnips, stir-fried celery and carrots (in coconut oil)
4. Lemon meringue pie, fruit salad (orange, banana, grapefruit), sliced bananas

SNACKS

Bananas, oranges, brazil nuts, dates, tangerines, fresh coconut

NOTE:

1. Fry only in coconut oil or chicken grease
2. No wheat, sugar or dairy products

DAY 2 - Choose 1 item from each category

BREAKFASTS

1. Grape juice, pineapple juice, carob milk (see recipe)
2. Honeydew melon, canteloup, fresh pineapple
3. Nut cereal (granola), rye toast with clover honey, peanut butter, rye flour pancakes with clover honey

LUNCHES

1. Pea soup, baked beans, fried tofu, sliced cold pork
2. Rye bread, peanut butter and honey sandwich (made with rye bread), cold pork sandwich (rye bread)
3. Cucumber slices, grapes, melon, fresh pineapple, strawberries, raspberries
4. Grape juice, pineapple juice

SUPPERS

1. Pork chops, roast pork, spare ribs
2. Green beans, green peas, baked squash, boiled beets
3. Soya noodles, rye bread
4. Spinach salad, cucumber slices
5. Carob cupcakes, fresh pineapple, melon, strawberry pie, raspberry pie, strawberries, raspberries
6. Grape juice, pineapple juice

SNACKS

Peanuts, raisins, grapes, cashews

NOTE:

1. Fry only in soya oil or soya margerine
2. No wheat, sugar or dairy products

DAY 3 - Choose 1 item from each category

BREAKFASTS

1. Apple juice, pear nectar, apple cider
2. Oatmeal granola, oatmeal (with apple or pear juice), oat flour pancakes, oatmeal muffins, buckwheat pancakes
3. Buckwheat honey

LUNCHES

1. Potato soup, tomato soup, tomato juice
2. Salad (lettuce, tomatoes, green peppers, onions)
3. Potato pancakes, french fries, buckwheat noodles with tomato sauce
4. Tuna, salmon
5. Apples, pears, apple sauce (sweetened with buckwheat honey), pear sauce (with buckwheat honey)

SUPPERS

1. Fried breaded fish (potato, flour, sunflower old), salmon patties, salmon loaf, tuna patties
2. Baked potato, boiled potato, french fries, baked potato rounds
3. Salad, sliced tomatoes, stewed tomatoes, corn
4. Apple crisp, pear crisp, tapioca pudding, baked apples, baked pears, oatmeal cake

SNACKS

Potato chips, apples, pears, pecans, walnuts, popcorn

NOTE:

1 Fry only in corn oil or sunflower oil

2. No wheat. sugar, eggs, dairy products

DAY 4 - Choose 1 item from each category

BREAKFASTS

1. Milk
2. Cream of Wheat, puffed wheat cereal
3. Pancakes (unbleached flour, no eggs), whole wheat toast with butter, puffed millet cereal, cheese melts
4. Cinnamon butter, maple syrup, cane sugar, avacado honey, butter, molasses (unsulphured)

LUNCHES

1. Milk
2. Grilled cheese sandwich (white cheese, butter), hamburgers, macaroni and cheese (white cheese), cold roast beef sandwich, hot beef and gravy on a bun
3. Raw broccoli, raw cauliflower, cabbage slaw, radishes, white cheese sticks, cottage cheese
4. Vanilla pudding (no eggs), yogurt, blueberry pie, shortbread cookies, plums, cherries, peaches, nectarines, blueberries, apricots, natural ice cream

SUPPERS

1. Milk
2. Roast beef, steak, meat loaf (no eggs), minced beef patties
3. Sweet potatoes, cooked broccoli, cooked cauliflower, boiled cabbage, brussel sprouts, turnip
4. Whole wheat bread and rolls
5. Blueberry pie, etc. (see #4 - LUNCHES above)

SNACKS

Shortbread cookies, bread sticks, crispbread crackers and cheese, almonds

NOTE:

1. Fry only in butter
2. No eggs

GENERAL NOTES

1. ON ALL DAYS - No additives or preservations are permitted - check ingredients on labels.

2. Particularly dangerous are BHT, BHA, monosodium glutamate (MSG), food coloring, artificial flavours.

3. Juices must be pure, unsweetened (frozen is often OK).

4. Sea salt is preferred to regular table salt, which contains chlorine and an anti-caking agent.

5. Dates, raisins should be unsulphured.

6. On days 1, 2, and 3 honeys are used as sweeteners in cooking - eg. day 1 - orange honey, day 2 - clover honey, day 3 - buckwheat honey or corn syrup.

7. White mozarella is safest cheese.

8. The flour of the day can be substituted for wheat flour in many recipes - eg. Day 1 - rice flour (brown or white)
   Day 2 - rye flour
   Day 3 - buckwheat flour (light) or oat flour or corn flour
   Day 4 - unbleached wheat flour

9. Soups should be homemade, containing only the ingredients of the day (eg. no noodles in chicken soup.)

HANDICAPPED CHILDREN'S ASSESSMENT AND TREATMENT PROGRAM

Conference held at The School on

Present: Mr. , Assistant Superintendent of Instruction
Kindergarten Teacher
Miss Classroom Assistant
Mr. Principal of the Junior School
Mrs. Supervising Nurse
Mr. Junior School Teacher
Mrs. Nursery School Teacher
Mrs. Home Teacher on the Pre-School Program
Mrs. Consultant in Speech and Language Therapy
Mr. and Mrs.
Mrs. Psychometrist, Handicapped Children's Program
Mrs. Physiotherapist, Handicapped Children's Program
Dr. Medical Director, Handicapped Children's Program

Each person present was asked to comment on problems as they saw them.

Dr.

is a child who suffers from minimal cerebral dysfunction, the cause of which is not known. She has a mild spastic diplegia, (Cerebral Palsy), a moderate hearing loss, delay in language development, she is inattentive on occasions and has impulsive behavior.

Mrs. indicated that a stretching program was required for in order to maintain her present function and reduce the possibility of developing contractures as she continues to grow. She felt it was quite appropriate for this program to be carried out in the school and had discussed this with Mr.

Mrs.

I was likely
wearing perfume

Mrs. had found to be cooperative for about the first twenty minutes of the testing and following this she began to display a good deal of controlling and difficult behavior. On the Reynell Language Scales, she had a verbal comprehension level of approximately four years but this was interfered with by her erratic attention span.

Mrs. ---Cont'd

On some of the performance tests of the WPPSI she functioned at the lower end of the Average range and was noted to have very good visual discrimination and alerting techniques. On the Beery Scale of Visual-Motor Integration, she functioned at the 5^3 (five year, three month level). In general then, appeared to be a child of normal intelligence with some delay in language skills.The impulsive, inattentive behavior tended to interfere with her testing.

Mrs. Mrs. indicated that she has a verbal comprehension level at the 4^5 (four years and five months) and that there has been a major improvement in the past year. There is also a marked improvement in her expressive language skills and she is now able to produce some complex sentences. She tends to use much more language than she does signing and in fact, has outgrown her need to use the signs. Her auditory discrimination is poor and she has poor articulation. On the Leiter Scale (a scale which tests non-verbal skills) she was able to pass all tests at the 5 (five year) level and some at the 6 (six year) level. She learns best in a visual manner and is able to use a good deal of trial and error in monitoring her performance. Her expressive language is at the 3^4 (three year, 4 month) level and on the PPVT, she functioned at the 2^{11} (two year, eleven month) level. She was attentive enough to work for about half an hour.

Mrs. Mrs. has tested extensively with particular emphasis on the grammatical analysis of elicited language. She found that she functioned in the Average range for children with a hearing loss and that her expressive language was between the 2.6 and 2.11 months level (approximately two years behind her chronological age). She was impressed by ability to participate in the test and in fact spent a good part of one day with her.

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Mrs. Mrs. presented an extensive report. cognitive skills, excluding language are at her age level and she fits in quite well with her present class in that area. She is using more and more language as the months go by and has a good deal more language than the other children in the class, so that in this area, she requires an individual program. The major problem over the past months has been in behavior. The major problem in this area is aggressive behavior which seems to occur more frequently in the unstructured areas. She reports that seems to manage quite well and in fact best in a small group situation. She does have poor self control. A method of managing her impulsive outburts has been organized by having her sit out, and if she cannot manage to do this within the classroom, of going to Mr. office where she then is able to sit on a stool. There is some feeling that the behavior has settled a little, i.e. she goes less frequently to Mr. office and that she is beginning to respond to verbal clues as far as behavior control is concerned. She greatly benefits from the use of a hearing aid and it is quite obvious when her hearing aid has been switched off (as appears to do in the residence).

Mrs. Mrs. indicated that was one of sixteen children in the nursery school. She is chronologically the oldest in the class, although there is a group of approximately one-third of the children who are within her age range. Cognitively, again, she is reported to do well and there is a major improvement in her speech over the past month. She has most difficulty in the area of social behavior, particularly at the free play time. If she does develop an interest in an activity such as a puzzle, she will sit at it for a good deal of time and will even communicate with other children during this period of time. However, she is anxious to control many of the play situations with the other children and will occasionally hit out. She also falls frequently (because of her cerebral palsy) and this sometimes results in a good deal of confusion in the class.

C.P ruled out,
so why is balance
ffected ?

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Mr. and Mrs. Mr. and Mrs. reported that since Christmas, behavior has been much more settled. She has been on Methylphenidate since that time. Sleeping has improved and she is somewhat easier to manage at home. They also report that this good appearance of behavior has occured previously and that she was really in a very difficult state before Christmas. They questioned the group as to what was felt to be major problem.

Summary

A good discussion was held amongst the group. It was agreed that behavior was the major problem followed by language. The question of how much these two disabilities were inter-related was discussed and there seemed to be some evidence that following improvement in receptive language, it was also easier for those around her to manage her behavior with verbal cues. Her inability to use language as a means of communicating with other children was considered to be a problem. The general tests of cognitive development as far as one could see, placed within the normal range of intelligence with superior skills in some of the visual areas. There was an agreement that her verbal comprehension was about the four year level and her expressive language at almost the three year level. There had been a major improvement in both areas over the past year. She continued to have problems with articulation and verbal discrimination. The question of school placement for next year was discussed. Again, her behavior would need to be considered in any setting. However, her verbal skills certainly

* surpass those of her present classmates in the first group at School and would continue to do so next year. It was felt that some thought should be given to a program which maintained her in the part in the program and part in a possible community program where she would have good verbal models.

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The following recommendations were made:

1. Exploration of possible settings within the public school system, a placement where it would be possible to include a behavior management approach was recommended, e.g. a kindergarten and teacher's aid and continuation of the level I program at School. (Mr. will initiate this.)
2. Mr will continue with the stretching exercise in consultation with Mrs.
3. Methylphenidate 10 mgm., a.m., 5 mgm., at noon, 5 mgm., at 4 p.m. will continue, supervised by Dr. (An appointment with Dr. will be made for February, 1982.)
4. Hearing aid etc. supervision by audiology department at the School.
5. A follow-up meeting in May of 1982 will be considered.

M.D.

January 25, 1982

Addendum: To All Who Attended Conference on

This is my summary of the meeting regarding . If the summary does not agree with your statement, could you please forward a revision to me and the notes will be corrected.

APPENDIX 8 a)

RECOMMENDATIONS FROM SUBMISSIONS

In this appendix we have attempted to summarize all of the recommendations and suggestions received in the submissions from patients and other interested persons. There was no attempt to edit out material that may not fall within the strict terms of the mandate of the committee. Wherever possible, the recommendations are taken directly from the submissions. Recommendations from specific patient groups or other organizations are also included in this appendix.

The recommendations have been organized under the following headings:

1. Research
2. Medical Community
3. Financial
4. Foods and Drugs
5. Toxic Environmental Elements
6. Children/Education
7. Prevention
8. Information/Resources/Facilities for the Environmentally Hypersensitive

RECOMMENDATIONS FROM SUBMISSIONS

1. Research

- Research should be done to determine if the tests and treatments used by clinical ecologists (provocative testing, neutralization, desensitization, rotary diets, avoidance, significant environmental/home changes) are really effective.
- The research on provocative testing, neutralization and desensitization processes should have first priority, in order to resolve the conflict between traditional allergists and clinical ecologists.
- The research teams should be broad-based, multidisciplinary.
- Research should be based on the body of research on clinical ecology already existing and should be done with a clear understanding of the techniques used by clinical ecologists.
- Research is necessary on the phenolics program of rapid neutralization/desensitization used by some clinical ecologists.
- Research is required to refine and improve the diagnostic and treatment methods used for environmentally sensitive patients.
- Research should be done on the effects of the interaction of chemicals and the long-term effects of chemicals on health. Studying the effects of single chemicals does not tell you anything about combined effects.
- Comprehensive research is necessary on the relationship between toxic chemicals and food on behaviour and/or learning problems in children.
- Research into developing ways of producing and distributing natural substances which are more acceptable to the sensitive.
- Research involving a multidisciplinary approach and physicists to explore the emerging conncection between hypersensitivity and electromagnetic phenomena.
- Epidemiological research is needed to evaluate how many people are affected by the disease - seriously, moderately or minimally.

- Holistic medical and environmental research should be supported.

- Animal research should be undertaken to determine the effects over generations of the use of processed foods (containing preservatives and food colourings and additives) on health.

- That the tests and treatments of clinical ecologists be assessed in terms of their ability to deal with environmental hypersensitivity by researchers who have a sensitivity toward the limitations of modern medical paradigms.

- That research into the overall effect on human health of the chemicals present in our environment be given a high priority in view of potential implications for health policy, the testing and licensing of new chemicals (whether they will be used for nutritional) medical, industrial, agricultural or other uses), occupational health and safety, and so on.

2. Medical Community

- That environmental hypersensitivity is recognized as a disease possibly caused by the contamination of our environment by a growing range of chemical compounds. (This in no way excludes the recognition of the dangers of certain naturally occurring substances.

- There should be recognition/awareness and support of the environmentally ill.

- There should be recognition/awareness and support of the tests and treatments of clinical ecologists.

- Medical schools should add a clinical ecology/environmental health speciality. There should be more doctors practising clinical ecology.

- That it be mandatory that all doctors currently practising medicine take a course on the principles of clinical ecology.

- Traditional allergists - should listen to their patients better and spend more time with them.
  - should be trained to test more extensively for food and chemical allergies.

- General practitioners - should be trained to recognize food allergies and be willing to do the appropriate tests. (Often M.D.'s and other specialists do not think of allergies when they cannot find a solution to the patient's problem - often, if the patients themselves suggest allergies, they are ignored, or are told they are hypochondriacs, nervous or referred to a psychiatrist).

- Psychiatrists - should have new patients allergy tested for food and chemical sensitivities prior to psychiatric treatment.
- Doctors should decrease their dependency on drugs for helping patients.
- A more comprehensive system of diagnosis and treatment that focusses on removeing causes of problems, (rather than symptoms) should be provided. Doctors should develop a more holistic approach.
- Doctors should stop telling patients that their symptoms are "all in the mind" simply because they are unable to diagnose the illness and because their treatments don't bring improvement.
- The Ministry of Health should develop reading lists and other informational materials alerting doctors to the symptoms and causes of environmental hypersensitivity, so that they can make a preliminary diagnosis and refer the patient to a clinical ecologist rather than to a psychiatrist.
- Raise the respectability of ecological/environmental medicine in order to attract qualified researchers.
- Doctors should be well trained in diet and nutrition and biochemistry and study the nutritional management of illness.
- Doctors should be taught about the wide range of allergic symptoms and something about allergic management. If allergic diagnosis and nutritional counselling is done early, huge O.H.I.P. costs and harm to patients would be avoided (i.e. by incorrect diagnosis and treatment).
- There should be better communication and cooperation between the traditional medical community and clinical ecologists and other alternative health practitioners.
- Employ social workers in doctors offices and clinics.
- Involve the public health nursing system in the area of environmental hypersensitivity.

3. Financial

- That we immediately but conditionally recognize alternative treatments of environmental hypersensitivity as practiced by reputable practitioners and that such treatments be covered by O.H.I.P.
- Development of Ontario Medical Association guidelines for clinical ecology and recognition and funding of all clinical ecology tests and treatments.
- Financial assistance relating to:
    - the travel costs and costs of tests and treatments in environmental units.
    - modification of homes to produce a safe environment.
    - additional costs for purchase of organic foods/ food and vitamin supplements.
    - additional costs for tests, serums, drops, etc.
- Provision of disability pensions and welfare coverage for the environmentally ill without excessive obstacles.
- Coverage of additional costs of tests/treatments by insurance carriers.
- Government compensation to persons with illnes related to urea formaldehyde or other toxic chemicals.
- All expenses relating to environmental illness including the cost of major environmental changes should be tax deductible.
- O.H.I.P. recognition and funding of 'holistic' medical practitioners.
- The services of naturopaths, homeopaths and osteopaths should be available through O.H.I.P.
- Financial assistance should be made available to parents of children who are environmentally ill and need to attend special schools that are 'safe' for them or need special diets.
- Some type of pension scheme should be developed for those unable to work due to the illness.
- Additional financial help should be available for those on welfare and/or disability pensions to assist in the costs of tests, treatments and food supplements.
- At present COMSOC pays for disabled persons to be able to continue to live in their homes. Financial help for renovations should be given to environmentally ill patients for the same purpose.

4. Foods and Drugs

- Organic and pure foods should be easily available (in supermarkets) at inexpensive prices.
- All ingredients in foods and household products should be listed on labels.
- There should be better controls on sprays and pesticides used to keep food fresh and also on hormones in meats.
- The provincial government should recommend to the federal government that much more exhaustive and detailed food labelling be instituted.
- Information on the toxic ingredients in drugs should be made available to the public.
- The immediate removal of Na Metabisulphite (used extensively to retain food colour) from use by restaurants and other food outlets serving the public.
- Hospital foods and food served in schools should be assessed for nutritional quality.
- Any radiated food coming into Canada from California should be labelled as such.
- That the government donate some of the available Crown Land where food could be grown in "green manure" to help those sensitive to the ammonia in manure (the food should be grown by people with sensitivities so they would understand exactly what must be done and won't be tempted to take short cuts, to get more or better looking food.
- That the Canadian Dietetic Association should not be allowed to control the access to vitamin/mineral supplements that are found helpful by patients.

5. Toxic Environmental Elements

- That we clearly recognize the limitations of testing new chemical compounds one at a time over and above the limitations these procedures have in forecasting the risks to human health from long-term low-dosage exposures. This is true for all chemical compounds regardless of the purpose to which they are put. It is therefore impossible to scientifically assess the risk or lack thereof to human health.

- It is necessary to reduce the number of chemicals in the environment and monitor closely the introduction of new chemicals. The government should ask about every new chemical: Is it necessary? Is it safe? Otherwise, the new chemical should not be introduced.
- Pharmaceutical companies should list all excipients contained in products. Excipients must be recognized as potentially toxic. A possible solution is the return to natural excipients.
- Information on all hazardous chemicals should be made easily available.
- We need better government control of chemical wastes.
- There should be restriction of necessary but hazardous chemicals, and increased control of all toxic chemicals.
- The government should do as much as it can to discourage the use of pesticides and herbicides in public places and recommend to the federal government where applicable the need to have pesticide-free cotton and foods imported.
- Elimination of unnecessary contaminants/chemicals in foods and drugs.
- There should be regulations to ensure that all employees know if their workplace area is to be sprayed with pesticides.
- There should be no pesticide spraying where children are present, in schools, day cares or apartment buildings.
- Stricter government control of air quality in all workplace environments.
- Ensure that all buildings have excellent ventilation and lighting systems.
- Increased government control of building/construction materials.
- Water purity should be guaranteed by government. We need to stop the pollution of our water supply.
- Increased government control on gas emissions.
- Smoking
  - no smoking in the workplace
  - enforce no smoking laws
  - no smoking in public areas/ hospitals/ schools/stores
  - non-smoking areas should have completely separate ventilation systems from smoking areas
  - higher tax should be levied on cigarettes.

6. Children/Education

- Recognize that food allergies in children can result in behavioural disorders and problems learning in school, that are not of emotional origin. Teachers/educators should be well informed on this area, in order to avoid the implications on the child of learning difficulties which produce long-term effects of a negative nature on the child.

- Children should not be put through the psychiatric/psychologic route without first establishing if the problems are due to sensitivities.

- Early diagnosis and treatment should be available for children to prevent the later chronic debilitating effects on children and also the enormous health care costs.

- The research on learning and behavioural disorders should be thoroughly reviewed with respect to the effects of changes in diet and environment and this information should be made available to educators and the medical community and the public at large.

- We should begin to keep statistics on the allergies of school children to give us information about the scale and dynamics of various forms of environmental hypersensitivity associated with our "chemical society".

- Because of the illness, some children are required to have at-home tutoring and it should not be necessary for their parents to have to fight to have the need recognized, due to lack of acceptance of the illness.

- Children with sensitivities need active support from the established medical community.

- Schools should be educating children in proper nutrition and junk foods should not be served/sold in the schools.

- Catering organizations which provide foods for school children should be provided with information on the needs for special diets of sensitive children.

- Public health authorities should regularly check out the cleaning chemicals used when children are in school.

- The Board of Education should immediately change its closed window policy in order to improve the very poor ventilation in schools.

7. Prevention

- Awareness of the illness and its' implications is the key factor in producing those actions that will lead to early diagnosis and to eventual prevention.
- Increase awareness of the disease, its possible causes and cures and make the public aware of the dangers of using pesticides, herbicides, drugs and chemicals in the workplace, home and schools.
- That the regulations requiring the specification of contents in foods be extended to other household articles to give the number of people with multiple allergies the possibility of preventing serious reactions.
- Information centers with complete directories of the chemical contents of household goods should be established and such centers should make this information available to the public.
- Educate health professionals on the dangers of drugs, foods and chemicals and their effects on health.
- Prevent pharmaceutical companies from controlling research.
- Provide more doctors practising preventive medicine in Ontario.
- Increase awareness, particularly in ashmatics and allergy patients of the dangers in bisulphides in drugs.
- Advertising to educate schools, teachers, parents and children on the dangers of air pollutants and foods and chemicals.
- More advertising to promote a cleaner environment.
- Enact and enforce tougher laws and penalties for polluting corporations - e.g. jail terms for the chief executive officers.
- Provide support for non-polluting methods of disposal of human wastes, garbage and household and industrial chemicals.
- Exert extreme pressure on all levels of government in Canada and the U.S. to cease polluting the environment.
- Educate the public in methods of living that will not pollute the environment.

- Improve methods of detecting and identifying environmental pollutants.
- Clean up the toxic waste dumps in Ontario and New York State. The drinking water of millions is at risk.
- Ensure that hazardous chemicals are kept out of the water supply.
- Find an alternative to chlorination of our drinking water. In Europe, ozone is used to purify the water. This may be a more sound ecological practice.
- That areas, cities or wells that currently have water that is still safe for some be protected from unnecessary fluoridation and chlorination and that insecticides and other chemicals that will penetrate the water supply not be used in that vicinity.
- That public health units return to their original basis - the provision of safe food and water supplies.
- That indoor air pollution laws re: smoking should be strictly legislated and enforced province-wide and should certainly include a smoke-free workplace clause.
- That manufacturers are made aware of the sensitivity problem so that building materials, clothing, etc. can be available without the added chemicals.
- Provide information sources to the public on safe building materials.
- That new buildings are constructed of materials containing fewer chemicals to minimize "outgassing".
- Enforce current air pollution laws and in addition, lower the permissable emission standards in the case of motor vehicles.
- That consideration be given to workplace air - that no smoking or perfumes should be the rule so that people can work and continue to be taxpayers rather than collect disability pensions.
- The agricultural use of pesticides and drugs in food animals should be reviewed and restricted where appropriate.
- The non-agricultural use of herbicides along roadsides, in parks, golf-courses and homes should be avoided entirely or reduced as appropriate.

8. Information/Resources/Facilities for the Environmentally Ill

- The Ontario government should develop a public information campaign on ecological illness, focussing on the need for more public awareness of the problems that can be caused ecological sufferers from the indiscriminate use of perfumes, harsh cleaning chemicals, etc. in public places such as offices, shopping centres and schools.

- A public information bank be made available to help people deal with different aspects of the problem. Information sources are required on where to purchase water, safe foods, and household products; how to choose the best water purifiers and where other sources of help are available.

- Food and drug admininstration departments should provide information to the public and to health food stores as to the reasons for the removal of specific products.

- A special hospital should be built for environmentally ill patients, which neither contains nor uses toxic chemicals.

- There should be a special emergency area for the environmentally ill in hospitals.

- Special consideration should be given to the allergic and environmentally ill, with regards to drugs administered in hospital.

- Build environmental units/hospital wing/outpatient clinic for the environmentally ill.

- Hospitals should have two or three environmentally safe rooms - no chemicals, plastics or foam materials.

- Provide a testing centre for environmental sensitivities - for provocative, bioassay and cytotoxic testing.

- Patients leaving hospital should have access to group homes, which should be located in small communities away from the city. This home would provide the opportunity to learn how to deal with the illness, regarding purchses and cooking of food and the use of cleaning products, while preparing to return home. There would be benefits from meeting others with the same illness which would decrease the sense of isolation and build confidence in dealing with others.

- Provide half-way houses

- Special, subsidized, environmentally safe housing should be available for environmentally ill patients who cannot afford to live in regular housing and make the changes required to make it safe.

- That self-help groups be encouraged to permit people with multiple allergies to exchange practical experience on "what works" and that this kind of experience be analyzed to complement the scientific knowledge base. The existence of such groups should be advertised through institutions such as public libraries.

- Information should be available on the available support groups or associations dealing with this illness.

- Emotional support systems should be available. Counsellors should be available who are supportive and understanding of the illness...for both the patient and his/her family.

- Provide up to date information on the disorder to the public and the medical community.

- There should be a central registry of doctors - showing their interests and philosophies so that patients need not find the kind of doctor they need by accident.

- Families should be encouraged to care for their disabled or ill members at home, with the appropriate financial and emotional supports. (It is possible that some disturbed children are sent to institutions misdiagnosed, when their problems may stem from food and chemical sensitivities).

- Information on sources of financial assistance and how to apply for them should be made available to environmentally disabled patients.

APPENDIX 8 b)

BRIEF

to the

Ontario Ministry of Health Committee

on

Environmental Hypersensitivity Disorders

submitted by the

Parents of the Environmentally Sensitive

Box 434, Station "R"

Toronto, Ontario

May 6, 1985

Introduction

Parents of the Environmentally Sensitive (PES) is an organization of persons concerned about food and chemical sensitivities and related environmental diseases.

This organization was established in 1982 by families with seriously ill adult children who were unable to receive support from any of the established support systems.

The aims of the organization are:

1. Promote formation of support systems for the environmentally ill and their families.
2. Provide development and dissemination of educational resources.
3. Promote basic and clinical research of environmental illness.

PES welcomes the formation of the committee and thanks the former Minister of Health, the Honourable Keith Norton, for establishing it.

PES has been aligned with the ad-hoc Committee, University of Toronto, on Environmental Hypersensitivity since its inception. PES representatives were present at all meetings to interpret to the ad-hoc multi disciplinary Medical Research Committee the nature of the illness, the lack of support systems for the patients and the need for immediate attention in order to save lives.

What is the problem?

Thousands of people in our society are sensitive, i.e., they react to various substances, whether man-made or naturally occuring. Many people with such sensitivities may be tested, diagnosed and treated by traditional methods. It is becoming increasingly apparent, however, that for many others, these methods are not effective. This development is occuring not only in Ontario but also in the United States and other industrial countries. It is, in short, a widespread and serious problem. In spite of this, people complaining of these susceptibilites are sometimes treated as either neurotics or hypochondriacs. They are left to cope, not only with their sensitivities, but also with burdens of frustration and despair in the face of such diagnoses.

Because their susceptibilities are life-disrupting and, in some cases, life-threatening, these patients are compelled to search out alternative forms of testing, diagnosis and treatment.

Until such time as the province provides appropriate environmental treatment centres in a clean rural setting, they should be prepared to subsidize patients directly for essential services. This would include environmental renovations, changes in houses and apartments,as is presently being done for the handicapped such as hemophiliacs, financial assistance for unusual and exotic diets, financial assistance for food supplements and appropriate medical treatment of the patients' choice. Currently the patients' families must assume the responsibility of establishing their own private hospitals.

Community and Social Services are presently designating the physicians who are to certify diagnoses of Environmental Hypersensitivity. Some of these physicians are opposed to the concept of environmental hypersensitivity, whether it be because of the politics of their organizations or general lack of knowledge and research. The patients are then prevented from obtaining financial assistance as well as home care. This attitude on the part of some physicians constitutes life-threatening circumstances for most of these patients. We recommend that this policy be discontinued. The patients' own physicians should be recognized as sufficient authority to certify diagnoses.

Appendix 8 b)

55 St. Leonards Avenue
Toronto, Ontario M4N 1K1
June 17, 1985

JUN 21 1985

Judge George M. Thomson
Provincial Court
Family Division
311 Jarvis Street
Toronto, Ontario
M5B 2C4

Dear Judge Thomson:

Thank you for granting this appointment with P.E.S. representatives before your report is completed on Environmental Hypersensitivity Disorder, Chemically Induced Immune Disorders or other names.

I apologize for not sending an advance notice of our latest proposals. However, Chris has been critically ill the last nine weeks and Dr. Nikiforuk and I have been working day and night to assist him in his recovery. As you know, there are no health support systems for our families.

We recommend that since there has been a change of government that a request be made for additional members to the committee on Environmental Hypersensitivity Disorders so that it will be more representative. P.E.S. continues to recommend a multi-disciplinary committee for a very complex disorder.

The following disciplines would ensure that the diversified knowledge is there to protect the patient.

(1) Experienced patients and experienced and involved families. Patients and families are necessary to educate the professionals.

(2) Clinical toxicologist - skilled in neurology and immunology.
Research toxicologist - not employed by government or industry to avoid conflict of interest.

(3) Clinical immunologist - experienced in the treatment of many chronic disease disorders.

(4) Geneticist

(5) Nutritional therapist - skilled in balancing nutrients for people with absorption problems.

(6) Physicians who have had adequate experience treating these patients. They must also listen, care, are curious and be clinically research oriented.

(7) Alternate therapists i.e. Naturapaths, Acupuncturists, Chiropractors who are experienced in the treatment of these patients.

continued ./.

(8) Preventive Advisors i.e. Public Health Nurses experienced in counselling these families.

We also suggest that education programs be established for health personnel, school boards, general public to facilitate and coordinate assistance for the seriously ill, develop prevention programs, etc. As you already know the Aids program appears to have an astronomical budget for what could be considered a lifestyle disease.

A further recommendation is that this disease be made reportable and thereby the incidence will be eventually known.

The most important proposal is the establishment of a "SLUSH FUND" to provide immediate relief financial assistance for the critically ill patients. If the Ontario Government can send patients to the U.S.A. for liver transplants that cost $135,000 U.S. funds, then they should no longer resist spending $25,000-$35,000 or whatever it costs to assist the most critically ill environmentally sensitive patients.

The terms of reference by the Ministry of Health Committee did not consider the immediate plight of the critically ill patients. The terms of reference were listed as Methods of Diagnosis, Incidence of the disease, and Treatment Modalities. We believe that these are not the issues. We believe that methods of diagnosis have been established in treatment centres all over the world. The treatment modality appears to be a red herring as anyone knows that the number of treatment modalities used for cancer have not been very successful, but are still being used.

We believe that like cancer, until a cure is found that critically ill patients should not be disallowed their chance to fight for their lives using the methods helpful to them. For the environmentally sensitive this may be specialized foods, safe water, cleaner surroundings, nursing and housekeeping assistance, special transportation, special supplements, special treatment programs. Since their immune systems have already been damaged by chemical invasions, all other assaults on the immune system should be avoided. Financial assistance, emotional support, adequate physical support would all help their damaged immune systems to recover. Instead so far they have not been treated as wonderful human beings but as outcasts delegated to a leper colony existence for the remainder of their lives. Is this not horrendous that the world's most debilated should be subjected to such inhumanity?

We believe that the illness is manmade-iatrogenic and in all probability involves the immune system. Therefore we recommend that the Provincial Government ban the use of herbicides and pesticides in Ontario since they are known to damage immune systems.

We believe that recommendations by the patients' doctor of choice should be acknowledged for disability pensions, special diets, nutritional supplements, special housing and services, etc.

continued ./.

Our chief concerns remain that the patients' health needs are overlooked while professionals continue to play games of power and politics.

I hope these suggestions may be of assistance in formulating your recommendations.

Yours truly,

Margaret Nikiforuk

Margaret Nikiforuk
President
Parents of Environmentally Sensitive

MN:sm

APPENDIX 8 b)

THE HUMAN ECOLOGY FOUNDATION OF CANADA

The Human Ecology Foundation of Canada

Head Office: 465 Highway #8, Dundas, Ontario, Canada L9H 4V9
Branches: Hamilton, Kitchener, Ottawa, and Toronto

send reply to:
65 Dolly Varden Blvd.
Scarborough, Ontario
M1H 2K2
January 28, 1985

OFFICE OF THE MINISTER OF HEALTH
FEB 04 1985
ONTARIO

Judge G. M. Thompson
Provincial Court
Family Division
311 Jarvis Street
Toronto, Ontario
M5R 2C4

Dear Judge Thompson:

RE: THE SCIENTIFIC TECHNICAL COMMITTEE ON ENVIRONMENTAL SENSITIVITIES

The Human Ecology Foundation of Canada was established in 1969 as a charitible organization. This small group started meeting at the home of Dr. J. Maclennan and evolved into the formation of the foundation with four branches--Ottawa, Kitchener, Toronto, and Hamilton. Head Office is located in Dundas, Ontario. The approximately one thousand members are people who have an interest in environmental illness (EI). Membership includes patients, relatives and friends of these patients, various professionals including physicians, and health oriented groups.

People who are environmentally ill are no longer able to adapt well to common exposures in their everyday environment. They may develop a variety of chronic or acute symptoms. that are brought on by substances in the air, food, and water. Natural inhalants such as pollens, dust, and molds, and even natural foods may begin to affect people adversely. This aspect of the condition is often referred to as allergy. However, the many synthetic chemicals that are now common around us can also cause symptoms, and overexposure to these can trigger EI, even in those with no history of allergy or other sensitivity to the environment. Symptoms may be mild and merely annoying, or they may become severe enough to interfere with a person's daily activities, family life, and career.

Membership in the organization includes a subscription to the

Foundation's "Quarterly" magazine, branch newsletters and notices of meetings, assistance and support via the telephone, and personal and written communication.

Concerns of the Group:

--securing and maintaining a clean environment to be employed in e.g. free of tobacco smoke, perfumes, pesticides, newly painted workplaces, and various other chemicals

--securing reimbursement for medical costs from health care insurance

--establishing disability under private disability policies

--establishing disability under Provincial and Federal programmes

--preventing employers from improperly dismissing or demoting

--securing financial assistance for the rehabilitation of living space

--if the patient is financially underprivileged, securing coverage under the Social Assistance Programmes

--securing Workers' Compensation payments

--securing just compensation from the companies and individuals responsible for the chemical exposures which caused the disabling illness

--securing proper income tax deductions for expenses associated with environmental illness, especially excess costs of remodelling, changing existing heating systems, and organic foods

--contesting a divorce and/or child custody in which the spouse tries to use the patient's environmental illness as 'proof' of severe emotional disturbances

--fighting discriminating practices in colleges and universities including law and medical schools, which threaten the student's ability to complete their education, and to enter into further specialty training

--securing safe environments and foods in public and private schools where environmentally ill children are involved

--securing safe environments and foods in prisons, mental hospitals, medical facilities, and other public and private institutions

--using EI as a possible defence in a criminal action

The Human Ecology Foundation of Canada

Head Office: 465 Highway #8, Dundas, Ontario, Canada L9H 4V9
Branches: Hamilton, Kitchener, Ottawa, and Toronto

The legal/government deck is stacked against them, Positions and priorities of our group of people have not been dealt with in a manner similar to other disadvantaged groups, e.g. physically handicapped. A relatively small number of people have been headlined in newspapers, outlining their deteriorating condition with the considerable financial burdens attached, and these cases are important. However, another group of people are also unable to work productively outside the home but function in their own environment existing on what income they can derive from personal savings, retirement pension funds, social assistance, programmes, and long term disability pensions. For some of these patients, full treatment is not possible due to their financial restrictions. A group of people are supported totally by their families. This causes considerable hardship because of the financial pressures of treatment, special foods, air cleaners etcetera. A fourth group include people who have been fortunate enough to be on full treatment (rotation diet using less chemically contaminated foods, treatment serums, environmentally clean home, new lifestyle and safe working places) and ultimately are functioning in society as productive citizens e.g. in schools, and workplaces.

Setting aside all of the financial concerns, one of the most difficult aspects of this illness is the lack of acceptance involved with EI both in and outside the home e.g. workplace, social situations, and within the medical profession. For some with specific symptoms the road to health is extremely difficult. Those who seek second opinions from traditional medicine are often labelled as having psychosomatic or emotional problems. Many do indeed experience emotional difficulties because of the traditional medical profession's hostility toward them. It is like a vicious circle that never ends resulting in suicide for some. This is why our Foundation has emphasized the need for a support system i.e. an understanding friend, member of the family, Human Ecology Foundation, and a clinical ecologist.

It is hoped that this information clarifies our concerns, difficulties, and hopes for the future.

Ecologically yours,

Darlene Koski (Mrs)

Darlene Koski
President
Human Ecology Foundation of Canada

c.c. The Hon. Keith Norton
Minister of Health--Ontario
Board of Directors
Human Ecology Foundation of Canada.

DK:bk

APPENDIX 8 b)

April 2/85
comm x

AIA
INCORPORATED 1970

Allergy Information Association
Room 7, 25 Poynter Drive, Weston, Ontario, M9R 1K8 (416) 244-9312

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March 28, 1985

Judge George M. Thomson
Chairman
c/o Office of the
Assistant Deputy Minister
Institutional Health
10th Floor, Hepburn Block
Queen's Park
TORONTO, Ontario
M7A 1R3

Dear Judge Thomson:

Enclosed, please find a statement of Allergy Information Association's position on clinical ecology vis-a-vis allergy.

The statement is written in an informal manner as you requested. The material in it is based on:

- my 15 years as the Executive Director of AIA.
- the input of well over 10,000 letters and telephone calls per annum.
- statistics from the questionnaires put to our membership over the years.
- in-depth counselling of many affected persons.
- observing the negative effect of the environment on a member of my own family.
- observing the procedures of a Practitioner of Clinical Ecology in testing another member of my family.
- attending seminars based on both traditional allergy and clinical ecology.
- in-depth conversations with both allergists and ecologists.

I believe the role of clinical ecology must be addressed for the protection and benefit of patients, and to ameliorate the negative impact this controversy is having on the medical community.

If any of the points I have made are unclear, or if I can further serve the Committee in any way, please contact me.

Sincerely,

M. Susan Daglish

M. Susan Daglish
Executive Director

MSD/pmb
Enc.

By Patients - For Patients

April 2/85 Comm X

AIA
INCORPORATED 1970

Allergy Information Association
Room 7, 25 Poynter Drive, Weston, Ontario, M9R 1K8 (416) 244-9312

In this brief the following points will be clarified.

1. Some individuals may react physically, and behaviourly to foods and environmental substances.

2. Traditional allergy treatment is meeting the criteria of science but failing to meet the needs of a growing number of patients.

3. Clinical ecology often meets the perceived needs of the patient but has not yet met the accepted standards of scientific validity.

4. It is recommended that clinical ecology be subjected to careful and objective study.

1. Some individuals may react physically, and behaviourly, to foods and environmental substances.

There are many persons suffering from physical problems such as: headaches, digestive tract upsets, aching joints, urinary problems, and from behaviour/emotional problems such as fatigue, irritability, hyperactivity, and depression.

Many persons and/or parents of such children believe that they are experiencing adverse reactions to some food or environmental factor. Once this factor has been discovered and eliminated, the person can lead a symptom-free or symptom-reduced life. Most of the cases I have dealt with are quite simple and straightforward:

- stop drinking orange juice and the joint aching ceases.

...2

- give up sugar and the headaches stop. Go on a sugar binge and experience a "hang-over".
- remove the rug from the bedroom and the headaches clear.
- eliminate cinnamon and eliminate enuresis.
- stop using fabric softeners and the irritability goes.
- stop drinking milk and the earaches cease.
- eliminate MSG and blood pressure levels normalize.

Try the food again after several months, use it sparingly and infrequently, and the symptoms seldom return. These are simplistic problems with solutions which are not costly in terms of money or quality of life. In a study conducted for AIA by the University of Toronto, 86% of the respondants manipulated their diet. 83% claimed to feel better for the dietary change.

At the other end of the spectrum are those who spend thousands of dollars on diagnostic tests, or hospitalization. Some try to keep on highly restrictive diets. Others pay huge sums to change their method of heating. Many spend hours shopping for "non-allergic" items. Others give up their social life to avoid scents and odours. Others move to remote areas giving up on life entirely. These attempts to eliminate allergens can be costly, non-productive, affect quality of life, and are perhaps misdiagnosed.

I have become convinced that for some people, the food and/or the environment does appear to affect them negatively.

Case #1

David, at the age of 7, began to experience a change of personality. From a very bright, well-adjusted child, he became unable to function at school,

...3

aggressive, easily angered, easily frustrated, and hyper- and hypo-active by turn. When he was taken out of a special education program which required bussing, his former pleasant personality returned, he was able to cope with school and graduated at the top of his class. He is now an adult, holds down a stressful job with no ill effects. If caught in traffic, his personality undergoes a change. Exhaust fumes seem to be the trigger.

Case #2

Bobbie is a child of 7. When first seen she was a fearful, restless, whiny, hyperactive child. As a flower-girl at a wedding she couldn't stand still - part way through the ceremony she simply left. An attempt to bring her back resulted in a tantrum. She had been seeing a well-qualified, traditional allergist for 5 years. Her parents took her to a Clinical Ecologist. He recommended removing some foods from her diet and in a few months her personality had undergone a change. She was again a flower-girl at a wedding. She was sunny of disposition, dignified, and performed her duties delightfully.

Case #3

Leslie, a young woman in her early thirties, had been seeing a traditional allergist who helped her control her asthma and rhinitis. However, her skin reactions and her fatigue was not controlled, and her allergist told her she would have to learn to accept these problems. She lost her job because she was so unwell. She began to see an ecologist. She removed some foods from her diet and made some changes in her accommodation. She is now employed and has risen to middle management of a large corporation, her skin has cleared, she has energy, and her asthma and rhinitis are better too.

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Case #4

A truck driver, who had been hospitalized in psychiatric wards on eleven occasions, saw a T.V. show featuring a Clinical Ecologist. His prime trigger was found to be food colouring. He had been well controlled for three years,then he ate a meal which he had been assured was colour-free. Less than an hour after ingesting the meal, the aggressive, wild behaviour which had hospitalized him previously reappeared and he destroyed the room's furnishings. He had to be sedated and temporarily hospitalized. The chef admitted he had used food colouring, but felt it would not matter.

Case #5

Kathy was a woman of 50. She had suffered from allergies all her life, and in particular during her four pregnancies. A traditional allergist helped her, but she suffered from continuing ill-health. She saw a Clinical Ecologist and other alternate medical practioners, eventually exclusively. She died of cancer which was diagnosed too late.

From my observations, I believe that environment illness is a real phenomenon. Many chemicals used by industry have been in use for less than 50 years. The effect of these chemicals is unknown, therefore the role of chemicals in relation to environmental illness has not been objectively studied. Chemicals are so prevalent in our food and environment,and growing in number so quickly that their effect must be evaluated objectively. To emphasize the importance of effect of chemicals on humans, consider DES and its adverse effects on some women. Cancer is a measurable disease, behaviour and emotional abberations are not.

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Twenty years ago, the AIA was formed because the official medical position was that allergy was a psychosomatic disease, and that persons who suffered from allergy were maladjusted. When children exhibited allergic reactions they were said to be "acting-out" and suffering from bad parenting. The maverick group of doctors , called allergists, gave guest lectures usually entitled "Allergies are not All in your Head". It is only fifteen years ago that the physiological nature of allergy was objectively studied and revealed. Only when allergy was accepted as a physiological, not a psycological,illness were talented investigators attracted to the field of allergy, making the control of allergic disease possible.

Because the phenomen of environmental illness is so widespread, I believe there is some physiological factor which underlies it, and until this factor is discovered the field will not attract qualified researchers, and the persons who suffer from its symptoms will not be well treated.

2. Traditional allergy treatment is meeting the criteria of science, but failing to meet the needs of a growing number of patients.

Patients with classical allergic diseases such as rhinitis, asthma, dermatitis, etc., also tend to suffer from the physical/emotional/behavioural symptoms listed in section 1. In a questionnaire AIA conducted in 1975, 70% of the respondants experienced both the classical and the ecological symptoms.

In the University of Toronto study (1984) done for AIA, 36% of the respondants were not satisfied with the help they received from traditional allergists, and 64% of these respondants sought treatment from a clinical ecologist or other alternative medical practitioner.

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Individuals who feel well-adjusted, and are not suffering from undue stress, do not believe it when they are told that their symptoms stem from emotional problems. It seems much more logical to them to find a physical cause for their symptoms. AIA has many complaints from patients who felt insulted by their physician's reaction when they asked about cause/effect relationship between environment and adverse reactions.

Physicians who listen to their patients are much more successful at treatment, not because of the placebo effect, but by listening to the experience of patients doctors gain new insights, at times leading to new discoveries. What if Dr. Simon , in LaJolla, California, had said to the patient who presented him with sodium metabisulphite, "Now, my dear, sodium metabisulphite is a safe chemical and no one has ever been shown to react to it"? The weakness of relying so heavily on science is the attitude that if there is no study to support it, it doesn't exist. Most studies are done because a marketplace value will be derived from the research i.e. for pharmaceuticals etc. Studies which will have a negative inpact on the marketplace are not easily financed.

The strength of the traditional allergist is that his dedication to science makes him a safe physician. The purpose of his diagnosis is to prove that the patient does not have allergy. When all other reasons for the symptoms have been eliminated, allergy is investigated. This attitude safeguards the health of the patient. It is this consideration which has led AIA to work with allergists, and to suspend judgement on ecology.

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3. Clinical ecology often meets the perceived needs of the patient, but has not yet met the accepted standards of scientific validity.

It seems clear from the letters and telephone calls received at the AIA office that patients are profoundly dissatisfied with the attitude of the traditional allergist to the physical/emotional/behavioural symptoms that concern them. They feel very belittled and insulted by the attitude of the traditional allergist that the root of their symptoms is psychosomatic. Naturally they seek a physician who appears to take their concerns seriously. It is this accepting attitude of the clinical ecologist that is both their strength and weakness. Ecologists, unlike allergists, do not do a differential diagnosis. By and large, they tend to accept the patient's premis that his/her symptoms are caused by allergy. I have no statistics available on this subject, but I would suspect that persons who have not obtained relief from their symptoms go to a clinical ecologist, do not obtain relief from clinical ecology yet continue to use its modes, even going to extreme measures to change their lifestyle, are individuals who may have been misdiagnosed by the ecologists and are not being well-served by the medical community.

Having pointed out that the major attraction of the ecology movement is their sensitivity to the needs of patients with difficult symptoms, their major fault is their loose grasp on the principles of science. Having interviewed many ecologists, I believe this lack of interest in the science of medicine stems from three basic reasons:

1. The mind-set of physicians attracted to clinical ecology.

These physicians are empiricists. They want to help others. When they find a method that works, they are uninterested in why the method is successful and unwilling to wait for rigorous scientific proof. They are not men of science. Basically these practitioners visualize themselves as medical

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pioneers, and quote the physicians of old such as Semmelweis and Lister who discovered the principle of bacteria without proving its existance. They justify their position by saying "I don't need to do studies, I know it works clinically". "I have been doing it this way for years, I can tell you that the procedures work". This leads to misapprehensions. I would like to use Dr. J. Day's study of UFFI as an example of this problem of allergy vs ecology. The ecologists were the first to take seriously the patients' perception that UFFI caused problems for some people. For this type of observation, the ecologist can be very valuable to society. However, having made this link, they diagnosed the problem in everyone who had symptoms and had Urea Formaldehyde Foam Insulation. Because of UFFI's name, formaldehyde is obviously a component of this form of insulation. When symptomatic patients did not have UFFI in the home, the ecologists made a leap and assumed that formaldehyde was the problem, advising patients to rid their environment of all products containing formaldehyde such as carpets, plastics, drywall, etc. Dr. Day's scientific studies have shown that some individuals do react to UFFI, but the trigger is not formaldehyde but some other factor, tentatively identified as mould produced by the breakdown of UFFI.

2. The Capability of these Physicians.

Ecology, at this point in time, is a fairly easy method of medicine and, because studies are not required, it is not crowded and very appealing because of the needs a physician can fulfill. The physicians who are currently practicing ecology are those who truly wish to help their patients who suffer from nebulous symptoms which are unmanageable by current medicine. In the bell-weather states such as California, slightly more unscrupulous physicians are attracted to ecology because the testing procedures, revisits needed, and the isolation hospitalization required, can be very lucrative.

...9

3. The Lack of Funds for Research.

In the past decade, funding for research has become increasingly scarce. It is safe to say that funds are fairly readily available if the study will result in the saving of lives, or in a product which will assist the GNP. Funding is not available for ~~the~~ such study because ecology deals with quality of life, and not in the manufacture of products for the marketplace.

RECOMMENDATIONS:

1. Make Ecology a separate speciality. Since Allergy has become more directed toward Immunology, and the symptoms experienced by those claiming environmental illness are not based on Immunology as it is now understood, it would seem logical to pursue the cause, triggers and effects of ecological illness as a separate entity.

OR

2. Make Ecology a part of Allergy by extending or generalizing the definition of Allergy to include adverse reactions. This has precedence as aspirin sensitivity and reactions to sodium metabisulfite are not IgE based, but are accepted and studied by allergists. By accepting reactions of ecological illness, patients would be better served by the more rigorous scientific bent of traditional allergy, the role of differential diagnosis, and the access to funding for studies.

3. Attract researchers to environmental illness. Patients are not well-served when their symptoms are diagnosed as psycological. COPD patients removed from respirators hyperventilate. This has been assumed to be anxiety. Now it is known that hyperventilation is due to respiratory muscle fatigue. Steps are needed to address environmental illness as a physiological problem. I feel strongly that ecological illness is a real, physiological problem for most of those who suffer from it. Designating all individuals who suffer from physical/emotional/behavioural symptoms as maladjusted is unfair and defeating.

...11

Only when ecological illness is taken seriously, and studied earnestly, will patients be helped.

The key to solving the many problems in the area of environmental illness is — research, good research. This area of medicine has been ignored by the talented investigators. I hope a major purpose of the Review Committee is to serve as a new starting point by raising the respectability of this area of medicine to not only attract qualified researchers, but also the research support to answer the critical questions concerning environmental illness.

APPENDIX 8 c) Recommendations -
Society for Clinical Ecology and Environmental Medicine.

479 RONCESVALLES AVE.
TORONTO, ONT. M6R 2N4

TEL. 536-9903

JOZEF J. KROP, M.D.
CLINICAL ECOLOGY

February 7, 1985

Judge George M. Thomson
Chairman
Committee on Environmental Hypersensitivity
Provincial Court
311 Jarvis Street
Toronto, Ontario
M5B 2C4

Dear Judge Thomson:

This is in answer to your letter to Dr. John Maclennan requesting our views of the areas of highest priority for research in the field of Clinical Ecology, the issue of prevention and the type of support seen as the highest priority for our patients. This is being submitted, after consultation, in the name of our group, The Canadian Society for Clinical Ecology and Environmental Medicine, which is presently being established.

RESEARCH

Any research when undertaken should be conducted with a clear and sound understanding of ecological principles. There are already 40 years of existing clinical observations carried out by Clinical Ecologists as well as existing research upon which further research should be based. Following are three areas which could be acted upon.

I Clinical

1. Conduct epidemiological studies presently started by the Ad Hoc Committee on Environmental Sensitivities under the chairmanship of Dr. Gordon Nikiforuk.

2. Conduct prospective studies of the effectiveness of ecological therapy.

3. (a) Analyze T and B cells in environmentally sensitive patients.

   (b) Dr. Krop has begun the above in co-operation with Dr. D. Banerjee, Director of the Immunopathology Laboratory, Department of Pathology at London's University Hospital. A grant is necessary to initiate studies of T and B cells and the sub-population of T cells on a control group of the healthy population.

(c) A grant is also necessary to perform functional studies on T and B cells of the environmentally sensitive as well as the control group.

II Experimental

Create an animal model to have another insight to chemical sensitivity and its management.

III Other

Create interest in pharmaceutical companies to produce, in keeping with ecological principles, natural products such as vitamins, minerals, amino acids and herbal remedies, all of which should enhance the immune system. These products should be especially prepared to be tolerable for the chemically sensitive.

PREVENTION

Obviously the proverbial "ounce of prevention" is preferable to any cure. Clinical Ecology and Environmental Medicine seeks to discover and remove the cause of illness and in guiding patients to this discovery, places upon them some burden of responsibility for good health. As they are motivated by the results, they accept this responsibility seriously. Our society in general must also accept this responsibility. In view of spiralling health costs, in both human and financial terms, prevention is the most desirable cost-effective treatment. Following are the areas in which changes can be instituted to prevent the onset of illness.

1. Home

Individual patient ecological management
- creating a safe and clean home environment
- changing lifestyle (diet, non-smoking, exercise, etc.

2. Workplace

Eliminating the "sick building syndrome"
- use of safe materials for interior finishing and a better system of ventilation
- banning use of tobacco

3. School

- Cease indoor painting of schools during the academic year
- Cease indoor pesticide spraying and outdoor herbicide spraying
- Use safe teaching materials in classrooms, particularly vocational classes
- Create environmentally safe classrooms (free of perfume, tobacco, etc.) for children with environmental illness

School (cont'd)

- Use safe cleaning products in school maintenance
- Use safe heating systems and water supply systems
- Begin early nutritional and pollution awareness education

4. General
    - Decrease the amount of pesticide use inside buildings and herbicide use in parks, golf courses and orchards
    - Promote organic means of pest control (e.g. use of boracic acid, Fossil Flower, electronic equipment) and promote research into alternatives to chemical use
    - Encourage co-operation with the Canadian Organic Growers Association to institute safe agricultural methods
    - Stop pollution of our water supply

PATIENT SUPPORT

Support from government and other institutions for environmentally sensitive patients is vital to their efforts to regain good health. They have enough difficulty coping with the environmental stresses which cause their health breakdowns. Following are suggestions for meaningful aid for these patients.

1. Recognize the existence of environmental sensitivity.

2. Facilitate processing of claims for Workman's Compensation, disability pensions, etc.

3. Make available social or financial assistance for special foods, water supply systems and changes to the home environment.

4. Validate ecological therapy to insurance companies and facilitate claims for patients who have private or group coverage. To this end, a meeting between the Superintendent of Insurance for Ontario and clinical ecologists should be arranged.

5. Provide OHIP coverage for the total cost of treatment in an Environmental Control Unit in the U.S.A. Such treatment must be indicated by a qualified member of the Society for Clinical Ecology and Environmental Medicine.

6. Introduce OHIP coverage for ecological testing. This would need to be accomplished in co-operation with our Society.

7. Fund establishment of Environmental Control Units for the severely sensitive and environmentaly safe halfway homes for those discharged from an ECU or recovering from chemical exposure.

8. Add Clinical Ecology and Environmental Medicine to the curriculum of medical schools.

We trust this gives you some insight into the problems faced by those suffering in an increasingly toxic environment and our concerns in the matter.

Respectfully,

The Canadian Society for
Clinical Ecology and Environmental Medicine

/ek
cc: Members

Beware 'Sick-Building Syndrome'

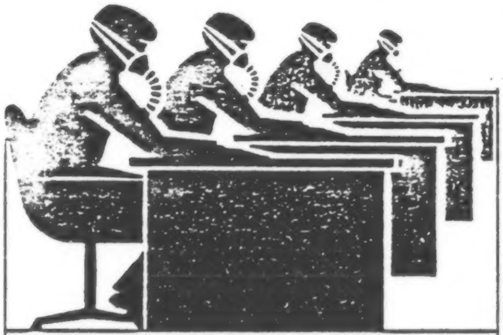
The deadliest pollutants of all may be the ones you breathe at home or at work.

The paramedics who found Eugene Beeman dead in his suburban Chicago home believed that the 54-year-old engineer had been felled by a heart attack. But an autopsy revealed that his blood was laden with carbon monoxide, and an architect discovered a number of sources of the deadly gas in Beeman's home. The verdict: Beeman had been poisoned by the air in his own house.

Over the past decade, Americans have spent nearly $200 billion to win a minor victory in the war against air pollution. But just when we thought it was safe to breathe again, there comes disturbing news. Study after study has discovered that air *inside* homes, schools and office buildings can be laden with a witch's brew of chemicals, gases, smoke, bacteria and other pollutants—sometimes in concentrations high enough to pose serious threats to health. The case of Eugene Beeman is still a tragic exception, since toxic substances are normally detected long before they can reach fatal levels. But scientists warn that the unavoidable act of breathing indoor air may cause or aggravate half of all the illnesses in the nation and may contribute to thousands of deaths a year. What environmental scientists call "sick buildings" pose a problem that cuts across state, social and economic boundaries. They have been found everywhere from trailer parks in Texas to an Environmental Protection Agency office in Washington. "We're just beginning to identify the problem of indoor air pollution," says Hugh Kaufman, EPA hazardous-waste expert and whistle blower. "But everywhere we look, it is worse than we expected."

Assumptions: Recent research has overturned some of the original assumptions about indoor pollution. At first, scientists suspected that indoor levels of chemicals and other contaminants simply reflected their outdoor concentrations. "Our initial thought was that exposure to chemicals would be highest in chemical-manufacturing centers," says EPA environmental scientist Lance Wallace. But when an EPA team sampled air from schools in the shadow of chemical-storage tanks and in relatively pristine suburban settings a few years ago, they discovered that outside air had almost no effect on indoor pollution levels. "It shattered all our preconceived notions," says Wallace. Intrigued, the researchers returned to Bayonne, N.J., one of their original test cities, and attached sophisticated air monitors to 350 people. "The results were a big surprise," says Wallace. "Indoor concentrations were always two to five times higher than outside levels. Sometimes they were over a hundred times higher." The lesson: "Even downwind from a chemical plant, it's better to open your windows."

But it does not follow that lack of ventilation is the only problem. Many researchers once thought of unhealthy air as a problem child of the energy crisis, a byproduct of attempts by architects and builders to save fuel by sealing out outside air. It is a notion that dates back to that early environmental engineer Ben Franklin, who once said, "No common air from without is so unwholesome as the air within a closed room that has been often breathed and not changed." Nine years ago, energy experts in the government became concerned enough about potential hazards in tight, energy-efficient buildings to set up an indoor-air-quality program at Lawrence Berkeley Laboratories. But when the LBL scientists actually went out to measure pollutant concentrations, they found that lack of ventilation was rarely the main culprit. Buildings were creating their own forms of pollution.


BOB CONRAD

LIVING IN A 'CHEMICAL SOUP'

A number of everyday products contain unsuspected hazards.

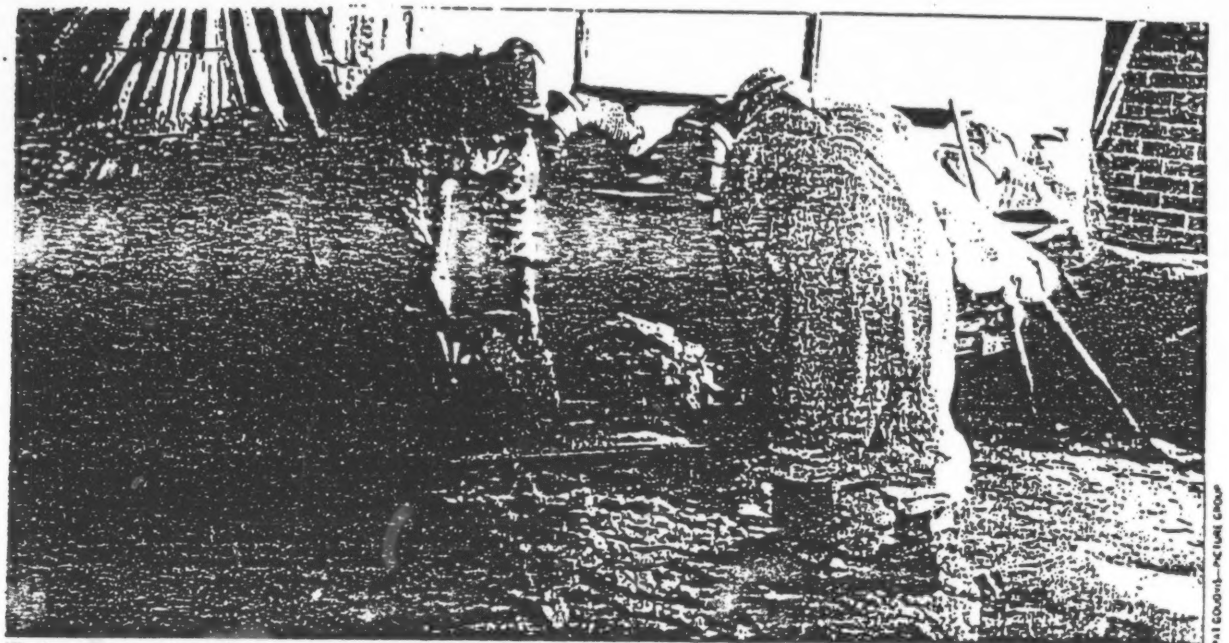
POLLUTANT	SOURCE	EFFECT
Radon gas	Uranium in soil	May cause lung cancer
Tobacco smoke	Smokers	Respiratory ailments
Asbestos	Pipe insulation, ceiling and floor tiles	Lung disease, cancer
Fungi, bacteria	Humidifiers, air-conditioning systems	Allergies, asthma, Legionnaire's disease
Carbon monoxide, nitrogen oxides	Stoves and heating systems	Headaches, drowsiness, nausea; in high concentrations, carbon monoxide is fatal
Formaldehyde	Plywood, particle board, foam insulation	Irritates eyes, skin and lungs; causes cancer in animals
Benzene	Solvent cleaners	Suspected of causing leukemia
Styrene	Carpets, plastic products	Damage to kidney, liver

JOSEPH M. ARENA—NEWSWEEK

The home, after all, is a place where oil, gas, wood and tobacco are burned (giving off nitrogen dioxide, carbon monoxide and hydrocarbons); it offers a collection of microclimates ideal for the cultivation of microorganisms (including fungi, nematodes and the bacteria that cause Legionnaire's disease among other ailments); it is a place where countless chemical products invisibly exude their volatile components, including styrene from plastics and benzene from solvents. Manufactured-wood products, such as particleboard and plywood, give off poisonous formaldehyde, and even the very soil beneath the foundation can emit radioactive radon gas. "We're all living in a chemical soup," says Wallace, who gave up after three hours of trying to count all the possible sources of contamination in his own bathroom.

Pungent Odor: No regulations require homes and most office buildings to be monitored for indoor pollutants; as a result, virtually all cases of "sick-building syndrome" are discovered by nature's own imperfect pollution detector—the human body. When Oakland High School in Oakland, Calif., moved into a new building four years ago, for example, students and teachers alike smelled the pungent odor of formaldehyde. School administrators at first denied that a problem existed. But after nearly half of the 2,000 students began to suffer from headaches, sore throats and fatigue that often mysteriously disappeared on weekends, they bowed to pressure for an inquiry. Researchers discovered formaldehyde concentrations of 1.45 parts per million (ppm), far above the .1 ppm standard used in West Germany and other European countries, and traced the chemical to particleboard shelves in the school's library.

Even the EPA, which critics accuse of neglecting the indoor environment, has had its own bout with indoor air pollution. Three years ago the agency converted part of a parking garage into office space to



PAT GOUDVIS—PICTURE GROUP

Workers remove asbestos insulation from a New Jersey school: Just when you thought it was safe to breathe again . . .

eliminate overcrowding in its Washington headquarters. Within a year workers began to complain of headaches and other ailments. Testing revealed carbon-monoxide concentrations of 25 ppm inside the offices, almost three times higher than EPA's own outdoor limit of 9 ppm. The agency abandoned the space at a cost of several hundred thousand dollars.

There are hundreds of similar tales. Confined to his condominium in Chicago's John Hancock Center after he broke his foot, businessman Frank Whitmer developed a number of alarming symptoms, including high blood pressure and chest pains. The last thing he suspected was the air in his own apartment. But when doctors could find no cause or cure, Whitmer hired indoor-air-pollution expert Kenneth Woods to investigate. Woods uncovered building-code violations that, he claims, allowed automobile-exhaust fumes from the building's garage to waft up to the residences above. Whitmer is suing the building's owners. Although the owners maintain that Whitmer's ailments were not caused by indoor air, they have already taken steps to improve the air quality in the building. In another instance, researchers from the National Institute for Occupational Safety and Health (NIOSH) who were investigating a government building in Washington discovered slime in the air-conditioner drain pans and up to a remarkable 83,700 fungi per cubic meter in the air, "a level," says NIOSH's Philip Morey, "comparable to a chicken coop or swine-confinement facility." During the past several years the Consumer Product Safety Commission (CPSC) has received more than 3,000 complaints about bad air. "If you believe that the air is making you sick," says the CPSC's Sandra Eberle, "it probably is."

JAMES D. WILSON—NEWSWEEK

Testing a kerosene stove: Toxic gas?

Mobile Homes: Investigators have found dangerous levels of pollutants even where there were no symptoms to tip them off. A recent study of 164 mobile homes in four randomly selected Texas trailer parks, for example, discovered that more than half had formaldehyde concentrations above .1 ppm. "Few homes had very high concentrations," says Thomas Stock of the University of Texas School of Public Health, who directed the study. "But a number were above what is considered safe." Scientists at Chicago's IIT Research Institute detected more than 200 different chemicals in a study of indoor air in 36 Chicago-area homes and found that in general, "indoor levels [of the chemicals] are significantly higher than outdoor levels," says IIT senior scientist Sydney Gordon. Other studies have found styrene in 80 percent of sampled homes in Bayonne, and 150 chemicals while monitoring 40 houses in Oak Ridge, Tenn.

The key question, of course, is how serious a threat these indoor pollutants are to health. The clearest danger is posed by ra-

Whitmer in Chicago condo: Auto fumes?

Legionnaire's disease victim: Bacteria from air ducts

don gas. Produced by the decay of uranium 238, a ubiquitous trace element in the earth's crust, inert radon does not bind to minerals and thus accumulates in the tiny air pockets in soil. From there, it is pulled into houses by pressure differences created by the rising of warm indoor air. Once inside, radon decays into other radioactive elements, such as polonium, that bind to dust and are inhaled into the lungs, where they can cause cancer.

Extrapolating from rates of lung cancer in uranium miners, who are exposed to known amounts of radon and its products, researchers have calculated that 2,000 to 20,000 cases of the disease each year may be caused solely by indoor radon pollution. The geology of Maine and parts of Pennsylvania, Maryland, Oregon and Montana leads to particularly high radon risks. "There are about a million homes with radon levels over the recommended standard," says Anthony Nero of LBL. "No other environmental risk, such as toxic-waste dumps, affects that many homes."

Passive Smoking: Smoke from other people's cigarettes is another serious health hazard. A continuing study by John Spengler of the Harvard School of Public Health shows that children whose parents light up at home suffer from 30 percent more lower-respiratory illnesses than children in nonsmoking families. British researchers have recently discovered that 85 percent of nonsmokers tested have measurable levels of tobacco substances in their urine, even though only half of the people believed that they had been exposed to smoke. The reason: many building ventilation systems recirculate tobacco smoke instead of removing it. Passive smoking, believes James Repace of the EPA, is responsible for up to 5,000 lung-cancer deaths per year—a figure the tobacco industry disputes.

As the case of Beeman demonstrates, carbon monoxide is another killer. A self-employed engineer, Beeman inadvertently increased the number of sources of the gas in his house, while cutting back ventilation to make it more energy-efficient. He built the house with a special bedroom furnace (allowing him to heat only the one room at night) and equipped it with a metal chimney and a-flue damper. When the furnace turned off, noxious gases held inside the chimney by the damper cooled quickly and backed down into the room. In addition, carbon-monoxide-laden exhaust from the gas dryer was vented indoors. Beeman's body tried to warn him about rising concentrations of lethal gases; a week before he died, he came down with the nausea and headache symptomatic of carbon-monoxide poisoning. But, as commonly occurs, the illness was misdiagnosed as flu. Fortunately, Beeman's story is a rare one. But Greg Traynor of LBL warns that cracked furnace-heat exchangers (found in about 5 percent of American homes) and unvented kerosene heaters could cause gases to reach potentially dangerous levels in indoor air.

Links between indoor chemicals and disease are more difficult to prove. Benzene and styrene, for example, which are found in a majority of homes tested, are known carcinogens at moderate doses. But there is still no proof that the lower levels typically found in indoor air pose a human health threat. "We have very few ways to determine if low levels of organic chemicals do cause cancer," says Lance Wallace. Researchers worry both that long-term exposure to low concentrations might lead to cancer and that the mixtures of 30 or 40 chemicals typically found in indoor air may be far deadlier than any one agent alone.

Formaldehyde causes special concern. Found in up to 3,000 different building products, formaldehyde causes nasal cancer in animals, and headaches, nausea and dizziness in humans. Worried that the levels typically found in indoor air posed a significant threat, the CPSC banned one of the major products, urea formaldehyde foam insulation, in 1982. The following year a federal court overturned the ban. Fortunately, believes LBL's John Girman, "it has such a bad rap that no market for it will exist." But there are still thousands of homes that contain the insulation and thousands of other sources of formaldehyde.

No such uncertainty exists about asbestos. A fibrous mineral used everywhere from insulation and floor tiles to brake linings and pipes, asbestos can cause lung cancer, a rare cancer called mesothelioma and asbestosis, a sometimes fatal scarring of the lung. Strenuous attempts to rid indoor air of asbestos fibers have been made over the last decade, but recent studies suggest that the problem is worse than expected. EPA surveys have discovered that 20 percent of the office and apartment buildings in 10 cities—and thousands of schools—contain asbestos in an easily crumbled state. In addition, hundreds of thousands of homes contain asbestos-wrapped pipes or air-distribution ducts made of corrugated asbestos paper.

Awareness: The technical cures to indoor air pollution are reasonably straightforward: radon gas, for example, can be maneuvered away from homes with pipes and fans, and increased ventilation alone can often cut concentrations to safe levels. But the economic and social problems are more vexing. Who will shoulder the costs of testing countless buildings and homes for dangerous pollutants or tearing out asbestos and formaldehyde insulation? Who will decide if smoking should be limited to protect the health of nonsmokers? Architects and scientists agree that new regulations covering the design and maintenance of buildings are needed to clean up indoor air, but EPA and other federal agencies have so far been slow to act. There are encouraging signs, however. Two months ago, the American Institute of Architects held a symposium designed to alert architects, engineers and builders to the problem of indoor air pollution. If that awareness spreads, the time may come when we don't have to go outside to breathe easier.

JOHN CAREY with MARY HAGER in Washington,
PATRICIA KING in Chicago and
SETH ZUCKERMAN in San Francisco

No Smoking
Please
smoking is
permitted only in
designated areas.

MICHAEL [illegible]—BLACK STAR

Sign of the times: Reducing the risk

APPENDIX 9*

SAMPLE ROTARY DIVERSIFIED DIETS

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1. Single-Food Meals: Initial diet plan inludes a set of "safe" foods, whih may be very limited in number at the start of rotary diet treatment. Quantities of each food may be large.

	Day 1	2	3	4
Meal A	lamb	halibut	turkey	shrimp
B	broccoli	avocado	spinach	carrots
C	cantaloupe	pineapple	yams	raspberries
D	cashews	filberts	sunflower seeds	walnuts

II. Multiple-Food Meals: Maintenance diet of multiple-food meals is possible within 3 -6 months of starting rotation schedule as sensitivities to additional foods decrease with avoidance and those foods can be rotated without inducing symptoms.

Day	1	2	3	4
A	apples rosehips tea tapioca	pineapple cashews comfrey tea	bananas walnuts ginseng tea	oranges Brazil nuts peppermint tea
MEAL B	lettuce tomatoes green pepper mushrooms sunflower seeds sunflower oil vinegar	lentil beans brown rice carob honey	yogurt peaches	avocado celery carrots
C	pork Swiss chard papaya	shrimp Chinese cabbage water chestnuts sesame oil lychee fruit	turkey squash okra honeydew melon	trout yams asparagus blueberries
	macadamia nuts	grapes	coconut	filberts

* (1) From Bell, I. *Clinical Ecology*

APPENDIX 10*

SHOULD I BECOME A PATIENT IN THE ECOLOGY UNIT?*

NOT IF:

1. I have not had a recent significant evaluation of symptoms from my family physician or appropriate specialist.

2. I feel I could not abide by the rules and obligations governing the Unit.

3. I am seeking a magic pill or prescription for symptomatic relief.

4. I am not willing to change my life style to whatever extent necessary to facilitate my return to good health.

5. I am not willing to give up addictions, such as smoking or alcohol, coffee, soft drinks, chocolate, sleeping pills, perfume, cosmetics, polyester knits, etc.

6. I am going to be too busy to continue testing or putting my home in order after I leave the ECU.

7. I would not consider eating less chemically-contaminated foods if I tested sensitive to commercially available more chemically contaminated foods.

8. I would not change out my gas or oil heat if I tested sensitive to these.

9. I will not change concepts of myself in my environment.

10. I will not decide to give myself and my health top priority.

*Taken from (10) Preliminary Information
WRJ and Associates, Inc.
Environmental Control Unit

APPENDIX 11

Alternative Therapies Reported by Patients

- Acupuncture
- Chiropractic
- Orthomolecular Therapy
- Hypnosis
- Massage

- Naturopathy
- Homeopathy
- Iridology
- Behaviour Kinesiology

- Vega 11, Magnetopulse (Electro magnetic therapy)

- Removal of Mercury Fillings
- Kelly Method

- Meditation
- Faith Healing

APPENDIX 12 a) POSITION STATEMENT:

THE AMERICAN ACADEMY OF ALLERGY AND IMMUNOLOGY

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Donald L. McNeil
Executive Director

February 15, 1985

TO: Executive Committee

FROM: Thomas E. Van Metre, Jr., Chairman TVmD
Practice Standards Committee

SUBJECT: Report summarizing activities of Practice Standards Committee, September 1984 - February 1985

A. The position statements on Personnel and Equipment to Treat Systemi Reactions Caused by Immunotherapy with Allergenic Extracts and on Remot Practice of Allergy have been circulated in NEWS AND NOTES and in gener have been received favorably. It is recommended that final approval of these statements be withheld until after hearing the comments of the Academy membership at the New York meeting. When approved by the Execu Committee, they should be published in the Journal of Allergy and Clini Immunology.

B. The Committee has been requested to develop four new position state

1. General Statement on Unproven Procedures for Diagnosis and Treatment of Allergic and Immunologic Diseases

Various members of the Academy have stated that we need a statement which concerns unproven procedures, which could be applied to any procedure at the time when it has not been proven safe and effective. For example, the suggestion for such a statement was made at the 1984 meeting of representatives of state, regional, and local allergy societies during the Chicago meeting of the Academy. Such a statement should gather in one place the principles which apply to the process of taking a new idea or procedure from the stage of speculation to the state of established and proven fact.

Draft of this statement is attached.
Approval of this statement is requested.
When approved, it should be published in NEWS AND NOTES for comments by the membership.

2. Statement on Candidiasis Hypersensitivity Syndrome

The Academy was requested to provide this statement by the stat of Minnesota, as indicated in the attached letter.

Draft of this statement is attached.
Approval by the Executive Committee and by the Academy Legal Counsel is requested.
When approved, the statement should be sent to the state of Minnesota and should be published in NEWS AND NOTES for comments by membership.

3. Statement on Carotid Sinus Resection

The National Center for Health Services Research Office of Health Technology Assessment (OHTA) requested this statement as indicated in the attached documents. The statement was written by Dr. Bernstein, approved by Practice Standards and Executive Committees, and forwarded to OHTA.

4. Statement on Chemical Hypersensitivity Syndrome is in drafting stage and should be ready in time for the Executive Committee Meeting.

C. The Committee has written letters and provided telephone consultations with reference to Academy policy on various procedures. Since these letters and telephone consultations concern established policy and require prompt action, they have been accomplished directly without seeking Executive Committee approval. Examples are attached.

1. Letter to Congressman Roybal
2. Letter to Dr. Edinger at HCFA
3. Letter regarding proposed HIAA policy. This letter was used as a basis for discussion between Dr. Aaronson and Mr. Korsak.

D. The requirements of such letters and telephone consultations indicate the importance of position statements on Academy practice standards policy. It is my opinion that the general statement on unproven procedures will be of particular importance in the future to clarify Academy position that unproven procedures are the potential strength of the future, but that many are called, few are chosen, and none should be used generally, and certainly none as procedures for profit until proven effective by proper trials.

E. From time to time, the Practice Standards Committee has been requested to make decisions with reference to payment or rejection of specific insurance claims. The Committee has taken the position that its role should be to develop and provide policy which can be used as the basis for such decisions. The actual decisions on the specific claim should be the responsibility of the insurance carrier and its medical consultants.

cc: Practice Standards Committee

TVM/jes

DRAFT STATEMENT OF PRACTICE STANDARDS COMMITTEE OF THE AMERICAN ACADEMY OF ALLERGY & IMMUNOLOGY

UNPROVEN PROCEDURES FOR DIAGNOSIS AND TREATMENT OF ALLERGIC AND IMMUNOLOGIC DISEASES

DEFINITION OF AN UNPROVEN PROCEDURE

An unproven procedure for the diagnosis and treatment of allergic and immunologi diseases is defined as any specific procedure for these purposes which has not been proven effective by proper trial.

RECOMMENDED POLICY FOR PROCESSING AN UNPROVEN PROCEDURE

All newly proposed procedures are unproven when first introduced. The future of the field of allergy and immunology and of the patient with allergic and immunologic diseases will be strongly influenced by the care with which these unproven procedure are developed and tested by those who initiate and sponsor them (11). The unproven procedure should be subjected to a fair trial to determine whether or not it is effe tive, the circumstances under which it is effective, and its relative merit with ref ence to other effective procedures for the same purpose. During the trial period, t procedure should be considered experimental and reserved for use with informed conse in appropriate controlled trials which have been approved for safety and scientific merit by competent institutional review boards. The procedure should not be accepte for general use until proof of effectiveness has been established and published in reputable "refereed" medical journals. Procedures which have not been proven effective may continue to be used on an experimental basis as described above or discarde but should not be sanctioned for routine use. Unless concerned with the trial, a physician or a medical facility should have no obligation to employ the procedure or to transmit knowledge of it. An insurance company or other third party payor should have no obligation to pay for the unproven procedure.

An unproven procedure can be proven effective, since it is possible to prove a positive point. However, under most circumstances, it is not possible to prove that procedure is ineffective, because one cannot prove a negative point. Therefore, the biomedical community should require proof of effectiveness of a procedure before the procedure is accepted for routine use, but should not demand proof of ineffectivenes: before discarding an unproven procedure.

The responsibility for testing the unproven procedure should rest with the proponent of the procedure, since the proponent understands and favors the procedure and can make sure that the trial is a proper one. The responsibility for reviewing the plans for and the results of the trial should reside with at least four groups of pe (1) physicians who work with and know the proponent, (2) the institutional review bo that reviews the trial protocol for safety and scientific merit, (3) the editorial board and the critics selected by the editorial board of the journal that considers for publication the manuscript which represents the recorded results of the trial, a (4) appointed practice standards committees of allergy specialty societies such as t Practice Standards Committee of The American Academy of Allergy and Immunology. Eac of these four groups of peers should on request by the proponent or other interested party provide a written critique of the recorded proposals for and accomplishments o the trial. Institutional review boards should have primary responsibility for proposals, editorial boards for unpublished reports of accomplishments, and practice standard committees for published reports of accomplishments.

NECESSITY FOR PROPER TRIALS

There is considerable evidence which indicates that neither patient nor physician can distinguish between an effective and an ineffective procedure without doing a prope trial. For example, before controlled trials, for at least 40 years, low dose immunotherapy with ragweed pollen extract was considered to be effective treatment for ragweed hay fever. In recent years, a number of controlled trials have indicated that low-dose immunotherapy was no more effective than placebos (5, 13, 14, 15), whereas immunotherapy with high doses of ragweed extract was effective (2, 6, 9, 10, 12, 13, 15, 16), was specific for ragweed hay fever (10, 13), and induced immunologic changes not induced by low-dose immunotherapy or placebo which included: an increase in protective IgG antibody to ragweed (1, 3, 4, 7, 13, 15, 16), an initial increase in sensitivity IgE antibody (1, 3, 4, 13, 15, 16), a diminution of the expected seasonal rise in IgE antibody to ragweed (1, 3, 4, 12, 13, 15, 16), and an ultimate decrease in ragweed IgE towards pretreatment levels (1, 4, 13). Nevertheless, many patients who received low dose immunotherapy or placebos were of the opinion that they had received an effective treatment (14, 15, 16).

Before controlled trials, for more than 10 years, whole-body extract of various *Hymenoptera* insects such as honey bee, yellow jackets, hornets and wasps were used to diagnose and treat anaphylactic reaction to their stings. Both patients and physicians were of the opinion that these extracts were effective for both diagnosis and therapy (8). In recent years, a series of controlled trials comparing the effects of *Hymenoptera* venoms, *Hymenoptera* whole-body extracts, and placebos have shown that immunotherap with whole-body extracts was no more effective than placebos, whereas venoms were clearly effective (8). Furthermore, they demonstrated that skin tests with *Hymenoptera* venoms were effective for distinguishing patients with a history of anaphylactic reactions to *Hymenoptera* stings from nonallergic patients, whereas skin tests with *Hymenoptera* whole-body extracts were not effective for this purpose (8).

PROPER TRIALS

A proper trial of an unproven procedure for diagnosis and therapy of allergic and immunologic diseases must deal effectively with problems that derive from the fact that the manifestations of these diseases in different patients run various courses which depend on a number of extrinsic factors which include allergens, emotional tension, irritants and infection and/or intrinsic factors such as the severity of the patient's sensitivity to allergens. The design of the trial should permit the investigator to separate the effects of the procedure being tested from the effects of other factors. The hypothesis to be tested should be stated clearly and related precisely to previously established fact and to its scientific basis. Reagents and procedures should be described and employed in such a way that they could be used in similar manner by subsequent investigators. They should not be used in the trial until developed to a point where they give consistent results under standard circumstances. The trial shoul concern a homogeneous group of patients whose characteristics are well described, so that similar patients could be found by a subsequent investigator. These patients should have the abnormality under study, but otherwise be essentially well. Such patients may not be found easily in the practices or allergy clinics of the investigators, and recruitment by advertisement in the media may be necessary. These patients should be stratified with reference to risk factors which might modify response, such as sensitivity to allergen. Then, by random selection, they should be divided into groups of equal size in such a fashion that patients in each study group have comparable characteristics and risk factors. By random selection, study groups should be assigned to test and control procedures. Results of the procedure should be evaluated as objectively as possible and expressed in quantifiable terms. If evaluation depends on a patient's or physician's judgement, the trial should be conducted "double-blind", so that neither patient nor evaluating physician know which patient received a specific test or control procedure. Appropriate statistical methods for evaluating the results of the study should be selected at the time of design of the study.

It is clear that before controlled trials were done, worthless procedures for diagnosis and therapy of allergic and immunologic diseases have been accepted as effective by both patient and physician. Therefore, proper trials are necessary, and an unproven procedure should be considered to be experimental and likely to be ineffective until proven to be effective.

RECOMMENDATIONS

The science of allergy and immunology has advanced to the point where effective procedures for diagnosis and treatment of allergic and immunologic diseases can be proven to be effective. Currently available procedures of proven effectiveness are sufficiently satisfactory for diagnosis and treatment of allergic and immunologic diseases so that ones of unproven effectiveness should not be employed in routine fashion, but rather should be considered experimental and reserved for use with informed consent in controlled trials which have been approved for safety and scientific merit by competent institutional review boards.

REFERENCES

1. Creticos PS, Van Metre TE, Mardiney MR, Rosenberg GL, Norman PS, Adkinson NF: Dose response of IgE and IgG antibodies during ragweed immunotherapy. J Allergy Clin Immunol 73: 94, 1984.
2. Franklin W, Lowell FC: Comparison of two dosages of ragweed extract in the treatment of pollinosis. JAMA 201:915, 1967.
3. Gleich GJ, Jacob GL, Yunginger JW, Henderson LL: Measurement of the absolute levels of IgE antibodies in patients with ragweed hay fever. Effect of immunotherapy on seasonal changes and relationship to IgG antibodies. J Allergy Clin Immunol 60: 188, 1977.
4. Gleich GJ, Zimmerman EM, Henderson LL, Yunginger JW: Effect of immunotherapy on immunoglobulin E and immunoglobulin G antibodies to ragweed antigens: a six-year prospective study. J Allergy Clin Immunol 70: 261, 1982.
5. Hirsch SR, Kalbfleisch JH, Golbert TM, et al: Rinkel injection therapy; A multicenter controlled study. J Allergy Clin Immunol 68: 133, 1981.
6. Hirsch SR, Kalbfleisch JH, COHEN SH: Comparison of Rinkel injection therapy with standard immunotherapy. J Allergy Clin Immunol 70: 183-190, 1982.
7. Irons JS, Pruzansky JJ, Patterson R, Zeiss CR: Studies of perennial ragweed immu therapy, associated changes in cellular responsiveness, total serum antigen-bindi capacity, and specific IgE antibody concentrations. J Allergy Clin Immunol 59: 1
8. Lichtenstein LM, Valentine MD, Sobotka AK: Insect allergy: The state of the art. J Allergy Clin Immunol 64: 5, 1979.
9. Lowell FC, Franklin W: A "double-blind" study of treatment with aqueous allergic extracts in cases of allergic rhinitis. J Allergy Clin Immunol 34: 165, 1963.
10. Lowell FC, Franklin W: A double-blind study of the effectiveness and specificity of injection therapy in ragweed hay fever. N Engl J Med 273: 675, 1965.
11. Lowell FC: Some untested diagnostic and therapeutic procedures in clinical allerg J Allergy Clin Immunol 56: 168, 1975.
12. Norman PS, Lichtenstein LM, Ishizaka K: Diagnostic tests in ragweed hay vever. A comparison of direct skin tests, IgE antibody measurements, and basophil histamine release. J Allergy Clin Immunol 52: 210, 1973.
13. Norman PS: Immunotherapy. Prog Allergy 32: 318, 1982.
14. Van Metre TE, Adkinson NF, Lichtenstein LM, Mardiney MR, Norman PS, Rosenberg GL, Sobotka AK, Valentine MD: A controlled study of the effectiveness of the Rinkel method of immunotherapy for ragweed pollen hay fever. J Allergy Clin Immunol 65:2
15. Van Metre TE, Adkinson NF, Amodio FJ, Lichtenstein LM, Mardiney MR, Norman PS, R GL, Sobotka AK, Valentine MD: A comparative study of the effectiveness of the Rin method and of the current standard method of immunotherapy for ragweed pollen hay J Allergy Clin Immunol 66: 500, 1980.
16. Van Metre TE, Adkinson NF, Amodio FJ, Lichtenstein LM, Mardiney MR, Norman PS; R GL, Sobotka AK, Valentine MD: A comparison of immunotherapy schedules for injecti treatment of ragweed pollen hay fever. J Allergy Clin Immunol 69: 181-193, 1982.

CANDIDIASIS HYPERSENSITIVITY SYNDROME
DRAFT STATEMENT OF PRACTICE STANDARDS COMMITTEE
AMERICAN ACADEMY OF ALLERGY & IMMUNOLOGY

This statement concerns what has been called Candidiasis Hypersensitivity Syndrom

A. Description of Syndrome

This syndrome has been described and popularized by Truss (1, 2, 3) and Crook (4). The symptoms are described as wide ranging and involving multiple systems and include fatigue, lethargy, depression, inability to concentrate, hyperactivity, headaches, skin problems including urticaria, gastrointestinal symptoms such as constipation, abdominal pain, diarrhea, gas and bloating, respiratory tract symptoms, and symptoms involving urinary tract and reproductive organs. Crook recommends to patients, "before ass your symptoms are caused or triggered by the common yeast germ Candida albicans, go to your physician for a careful history and physical examination and appropriate laboratory studies or tests. An examination is important because many other disorder can cause similar symptoms. However, if a careful check-up doesn't reveal the cause for your symptoms and your medical history (as described in this book) is 'typical' it's possible or even probable that your health problems are yeast connected." (4, page XI) He further notes that tests do not help much because "Candida germs live in every person's body — especially on the mucus membranes. Accordingly, vaginal and other smears and cultures for Candida don't help. Therefore the diagnosis is suspected from the patient's history and confirmed by his response to treatment." (4, pages 27-28)

The alleged basis for the syndrome is described by Crook as follows. "Antibiotic especially broad spectrum antibiotics, kill 'friendly germs' while they're killing enemies. And when friendly germs are knocked out, yeast germs (Candida albicans) multiply. Diets rich in carbohydrates and yeasts, birth control pills, cortisone and other drugs also stimulate yeast growth. Large numbers of yeasts weaken your immun system. Your immune system is also affected adversely by nutritional deficiencies and sugar consumption, and by exposure to environmental molds and chemicals (such as formaldehyde, petrochemicals, perfume and tobacco). When your immune system is compromised and your resistance is lessened, you may feel bad 'all over' and develop respiratory, digestive and other symptoms. And you're apt to develop adverse reactio to additional foods, inhalants and chemicals. As a part of these reactions, mucous membranes throughout your body swell and you develop infections caused by bacteria an viruses that a strong immune system would ordinarily conquer. When you develop an infection, you're apt to be given 'broad spectrum' antibiotics. Such antibiotics, while at times essential, promote the growth of Candida albicans which depress your immune system. And your health problems continue until the vicious cycle is interrupted by a comprehensive treatment program designed to decrease the growth of Candid albicans and increase your resistance." (4, pages XV-XVI)

The recommended program for the Candidiasis Hypersensitivity Syndrome includes:

1. Continuing observation so that concomitant diseases can be detected, accurately diagnosed and specifically treated.
2. Exercise program
3. Mental health program
4. Avoidance of chemical pollutents
5. Use of antioxidants
6. Use of special laboratory tests
    - (a) Ratio of helper cells to supressor cells
    - (b) Blood vitamin studies
    - (c) Mineral studies in hair, blood and urine
    - (d) Amino acid studies in urine
    - (e) Essential fatty acid profile

7. Special dietary program

   (a) Diet nutritionally adequate with fresh foods from a variety of sources
   (b) Diversified diet
   (c) Avoidance of all refined carbohydrates, including sugar, corn syrup, dextrose and fructose
   (d) Avoid refined, processed and fabricated foods.
   (e) Avoid fruits and milk initially. Later, try to rotate fruits back into diet if they are tolerated.
   (f) Avoid all yeast and mold-containing foods initially. Ultimately, some of these may prove to be tolerated since a yeast-containing food does not make Candida albicans organisms grow.
   (g) Eat sugar-free yogurt.
   (h) Take nutritional supplements including vitamins, minerals and essential fatty acids.

8. Use of antifungal agents

   (a) Nystatin
   (b) Clotrimazole
   (c) Nizoral
   (d) Amphotericin B

   These agents may be used orally or topically in the vagina for months.

9. Use of allergenic extracts of Candida albicans for (a) immunotherapy and/or (b) provocation/neutralization

Dr. Crook emphasizes two points about his program for Candidiasis Hypersensitivity Syndrome which are of great importance.

(a) The disorder is very common and has multiple manifestations. Any physician who reads his book will recognize that patients with the complaints described are very common indeed.
(b) The disorder can be diagnosed only by favorable response to his treatment program given over a sufficient period of time. He emphasizes that treatment requires time, patience, persistence and careful management of the multiple factors contributing to the illness.

Critique

The Practice Standards Committee finds multiple problems with the Candidiasis Hypersensitivity Syndrome.

1. The concept is speculative and unproven.

    (a) The basic elements of the syndrome would apply to almost all sick patients at some time. The complaints are essentially universal; the broad treatment program (particularly elements A1, 2, 3 and 7a) would produce remission in most illnesses regardless of cause.
    (b) There is no published proof that Candida albicans is responsible for the syndrome.
    (c) There is no published proof that treatment of Candida albicans infection with specific anti-fungal agents (A8) benefits the syndrome.
    (d) There is no proof that immunotherapy or provocation and/or neutralization with Candida albicans allergenic extracts (A9) benefit the syndrome.
    (e) There is no proof that the recommended special studies (A6) are effective diagnostic tests for the purposes for which they are employed.

2. Elements of the proposed treatment program are potentially dangerous.

    (a) Resistant species of Candida albicans and of other pathogenic fungi may be produced by long-term oral use of the major antifungal agents (A8).
    (b) Untoward effects from oral use of antifungal agents (A8) are rare, but some inevitably will occur.

3. The program is expensive and time consuming.
4. The concept is misleading. The public is misled to the belief that this syndrome is a specific illness which provides an explanation for many distressing and incapacitating symptoms and that specific treatment will provide relief. This misinformation leads to demands for the diagnosis and treatment and to unjust criticism of the physician who does not apply it, the medical school which does not teach it, and the insurance company who does not provide coverage for it.

Recommendations

On the basis of the evidence so far reviewed and until appropriate published eviden to the contrary is brought to its attention, the Practice Standards Committee recommend that the concept of the Candidiasis Hypersensitivity Syndrome (see A) is unproven. The diagnosis, the special laboratory tests (A6), and the special aspects of treatment (A8, 9) should be considered experimental and reserved for use with informed consent in appropriate controlled trials which have been approved for scientific merit and safety by competent institutional review boards.

REFERENCES

1. Truss CO: Tissue injury induced by Candida Albicans: Mental and Neurologic manifestations. Jour Orthomolecular Psychiatry 7: 17, 1978

2. Truss CO: Restoration of immunologic competence to Candida albicans. Jour Orthomolecular Psychiatry 9: 287, 1980

3. Truss CO: The role of Candida albicans in human illness. Jour Orthomolecular Psychiatry 10: 228, 1981

4. Crook WG: The Yeast Connection; A Medical Breakthrough. Jackson, Tenn., Professional Books, 2nd Ed., 1984

2/11/85

POSITION STATEMENT - CLINICAL ECOLOGY

BACKGROUND

Clinical ecology is an approach to medicine which ascribes a wide range of symptoms to exposure to numerous common substances in the environment (1-8). Advocates of this practice describe themselves as "ecologically orientated". Patients are said to be "environmentally ill", or "hypersensitive" or "allergic" to environmental factors such as food, water, chemicals, and pollutants.

It is suggested that this adverse host response and multiple symptomatology develops after prolonged environmental exposure. Once such "sensitivity" has occurred, individuals become sensitive to multiple other environmental exposures (foods, chemicals, etc.). Symptoms exhibited as a result of so-called ecological disease are multiple. These include behavior disorders, depression, chronic fatigue, arthritis, hypertension, learning disabilities, schizophrenia, gastrointestinal symptoms, respiratory problems, hypertension, and urinary complaints. There are very few symptoms which have not been possibly related to such an etiology.

Theron Randolph, a founder of the clinical ecology movement, believes that traditional allergy is restricted by definition (1,3,5). In his view, each person exists in a dynamic equilibrium with his environment with an adaptation to the environment. When this adaptation becomes deranged, that is, maladaptation, either acute or chronic illness results. He claims that the primary aim in clinical ecology is the demonstration of etiology, that is, "the cause and effect relationships between given environmental exposures and specifically suspectible persons."

Recently, it has been postulated that these chemical and food sensitivites are related to a malfunction of the immune system which has been termed "immune dysregulation". This concept has been described as follows (2): "Immune system dysregulation can develop over a long period of time and triggered by a single serious viral infection, major stress, fungi infection, particularly candida albicans, and accumulative exposure to toxic chemicals, even at low levels found in our everyday environment or massive chemical exposure. Immune system dysregulation often remains undiagnosed, however, because many physicians faced with its incredible array of seemingly unrelated symptoms and unfamiliar with the available diagnostic methods, misdiagnose it as stress, psychosomatic disease or the like. The medications commonly prescribed for these problems may suppress the symptoms to some extent but often further aggravate the problem without dealing with the underlying disease process. When the immune system is malfunctioning it causes a broad range of symptoms and reaction to a number of harmless or even beneficial substances entering the body. The malfunction commonly originates with the T cells. When the normal complement of T cells are reduced in number or when their ability to function is impaired, they can no longer adequately control B cell production of antibodies. Without this control the B cells cannot distinguish harmless dust pollen, animal dander or vital and nutritious foods from toxic chemicals or life-threatening bacteria or viruses. The actual healing process from immune system dysregulation is long, slow and punctuated by exasperating short-term setbacks. These setbacks are part of the healing process and invariably follows a roller coaster pattern. The frequency, duration and severity of setbacks gradually diminish until symptoms are mild and occur only occasionally."

In establishing a diagnosis for "ecologically-related" disease, the testing techniques include serial endpoint titration and the use of subcutaneous and sublingual provocation and neutralization techniques in addition to RAST and PRIST tests and immunotherapy (2). Other modalities include fasting except for water, and introduction of new foods in a cyclical manner. Multiple tests of the immune system are frequently done including assays of B and T cells, complement, immune complexes, and lymphocyte function.

Treatment usually requires major changes in the home environment and life-style. Diets are often highly restricted. Often foods are rotated in a cyclical manner in which a specific food is ingested every three or four days. Processed foods containing coloring or flavoring agents are often eliminated. At times, a total elimination diet except for special spring waters, is prescribed initially, followed by simple oral challenges with less contaminated organic foods. At times, the patient is hospitalized in a comprehensive environmental control unit in a presumed chemically-free environment. Home and working environments are difficult with recommendations for so-called "safe rooms". These are special isolation rooms where the air is filtered and from which all synthetic materials have been removed. Social lives are often markedly restricted as most environments away from home are "unsafe".

In addition to dietary and environmental restrictions, patients are frequently treated with solutions of "allergens" administered either by injection or sublingually. They are generally low in disage and follow the provocation and neutralization technique. In addition to the conventional food, pollen amd mold allergies, "immunization" treatment may include chemicals, such as phenol, formaldehyde, histamine and serotonin.

CRITIQUE

The environment is very important in the lives of every human being. Environmental factors, such as chemicals and pollutants, have been shown to influence health. The idea that the environment is responsible for a multitude of human health problems is most appealing. Yet to present such ideas as facts, conclusions or even likely mechanisms without adequate support is poor medical practice.

The theoretical basis for ecologic illness in the present context has not been established as factual. Nor is there satisfactory evidence to support the actual existence of "immune system dysregulation" or maladaptation. There is no clear evidence that a variety of symptoms noted above, are related to allergy, sensitivity, toxicity, or any other type of reaction from foods, water, chemicals, pollutants, viruses and bacteria in the context presented. Properly controlled studies defining objective parameters of illness, properly controlled evaluation of the treatment modalities and appropriate patient assessment have not been done. Anecdotal reports do not constitute sufficient evidence of a cause and effect relationship between symptoms and environmental exposure. The major techniques used by the clinical ecologists are controversial and unproven. The American Academy of Allergy and Immunology has previously published Position Statements concerning subcutaneous and sublingual provocation neutralization procedures and found to be unproven (9). More recent review of new data submitted by a number of the clinical ecologists to the Academy's Practice Standards Committee, have not changed that recommendation. There are no adequate studies of the cyclical diets, elimination diets, injection therapy with chemicals or even the environmentally-controlled units to substantiate their use. Many of the patients have a normal physical examination and normal laboratory tests.

There are no immunologic data to support the dogma of the clinical ecologists. To suggest that these patients lack T cell suppressor function has not been supported by published data. The suggestion that neutralization therapy can provide rapid relief within minutes or hours cannot be supported by controlled clinical studies or immunolgic data.

There does remain the problem of the patient with multiple symptoms who does not clearly fit any disease category and whose illness fails to respond to conventional therapy. These patients are often labeled psychosomatic, a concept that many patients and physicians have trouble accepting and managing. That dilemma may lead the patient to seek out the clinical ecologist. As Brodsky (10) points out, "This medical subculture (Clinical Ecology) does not talk about cures; the health-care professionals neither promise nor give hope of eliminating the offending condition, and the patients do not seem to expect it. Like people with diabetes or with long-standing inflammatory bowel disease, they accept the inevitable. In contrast, however, patients seem content with their condition and the reassurance that their symptoms have a physical cause".

SUMMARY

An objective evaluation of the diagnostic and therapeutic principles used to support the concept of clinical ecology, indicates that it is an unproven and experimental methodology. It is time-consuming, expensive, and places severe restrictions on the individual's life-style. Individuals who are being treated in this manner should be fully informed of its experimental nature.

Advocates of this dogma should provide adequate clinical and immunologic studies supporting their concepts, which meet the usually accepted standards for scientific investigation.

REFERENCES

1. Randolph TG: The future of medicine in a monotonous polluted world. Bulletin of the Human Ecology Research Foundation, 1980.

2. Position Paper: A new medical specialty designed to identify and treat environmental illness, Society for Clinical Ecology. 1983-1984.

3. Randolph TG: Graphic representation of clinical ecology. Clin Ecol 2:27, 1983.

4. Levin AS: The hypothesis of immune system dysregulation in food and chemical sensitivities. A communication from the author.

5. Randolph TG: Ecologic orientation in medicine: Comprehensive environmental control in diagnosis and therapy. Ann Allergy 23:7, 1965.

6. Rea WJ, Bell IR, Suits CW, et al. Food and chemical susceptibility after environmental chemical overexposure: Case histories. Ann Allergy 41:101, 1978.

7. Rea WJ: The environmental aspects of ear, nose, and throat disease. Part I. JCEORL and Allergy 41(8,9):41, 1979.

8. Mandell M, Conte AA: The role of allergy in arthritis, rheumatism and polysymptomatic cerebral, visceral and somatic disorders: A double-blind study. J Intern Acad Prev Med, VII: No. 2, 1982.

9. Reisman RE: American Academy of Allergy: Position statements - controversial techniques. J Allergy Clin Immunol 67:333, 1981.

10. Brodsky CM: "Allergic to everything": A medical subculture. Psychosomatics 24:731, 1983.

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January 31, 1985

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Hon. Edward R. Roybal
Member of Congress
Chairman Select Committee on Aging
2211 Rayburn Office Building
Washington, D.C. 20515

Dear Mr. Roybal,

Thank you for your letter of January 4, 1985 to Dr. Fink, a c
of which is attached (Attachment A). This was forwarded to me for

The allergist who employs standard proven procedures for diag
treatment of allergic and immunologic diseases finds that these ar
by Medicare. Under most circumstances, these procedures are most
when done on an ambulatory basis, and they are reimbursed by Medic
done on this basis. They are also reimbursed by Medicare under ci
where they must be done on an inpatient basis, provided that there
justification for performance in this setting. Standard proven pr
diagnosis and treatment of allergic diseases are defined in Primer
and Immunologic Diseases, JAMA 248, 2579-2759, 1982.

The American Academy of Allergy and Immunology has recommende
procedures for diagnosis and treatment of allergic and immunologic
considered to be of unproven effectiveness and therefore reserved
experimental use with informed consent in controlled trials which
approved for safety and scientific merit by competent institutiona
boards. These procedures are defined in the attached position sta
(Attachment B). (American Academy of Allergy: Position Statements
versial techniques. J. Allergy Clin Immunol 67, 333 1981, and upd
1984). They include leucocytotoxic testing; autogenous urine adm
skin-test end-point titration to determine optimal dose for immun
intracutaneous and subcutaneous provocation and neutralization, an
provocation and neutralization.

The Health Care Financing Administration (HFCA) has proposed
certain food allergy testing and treatment techniques from Medicar
The procedures that would be excluded from coverage are the cytoto
test, sublingual intracutaneous and subcutaneous provocation and n
testing, and neutralization therapy for food allergies" because "a
evidence does not show that there tests and therapies for food all
safe and effective"(Federal Register 48, 37716-37722 Aug. 19, 1983
(Attachment C). The American Academy of Allergy and Immunology s
endorses this proposal.

The Food and Drug Aministration has called attention to probl
promotion of cytotoxic testing. Some of the literature which they
lated is attached (Attachment D). The American Academy of Allergy
Immunology agrees with these concerns as indicated in the attached
Dr. Slavin (Attachment E).

The Practice Standards Committee of the American Academy of Allergy and Immunology will be pleased to help you in this matter where possible.

Very sincerely yours,

Thomas E. Van Metre Jr

Thomas E. Van Metre, Jr. M.D.
Chairman Practice Standards Committee

cc: Dr. Jordan N. Fink
Practice Standards Committee
Mr. Donald L. McNeil

APPENDIX 12 b)

American Academy of Environmental Medicine

Position Paper
1984 - 85

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WHO AND WHAT IS THE AMERICAN ACADEMY OF ENVIRONMENTAL MEDICINE

The American Academy of Environmental Medicine is made up of allergists, otolaryngologists, pediatricians, internists, immunologists, surgeons, dermatologists, psychiatrists, obstetricians, gynecologists and family practitioners. These physicians are interested in newer concepts utilizing diagnostic and treatment modalities which have proven to be efficacious in relieving environmental illness. They seek to identify environmental agents, allergens, toxins, and infectious diseases which compromise the homeostatic defense mechanisms. When avoidance of environmental stressors is impossible, they employ specific immunotherapy to combat both IgE and non-IgE immune sensitivities rather than relieve *symptoms with drugs*. Also since it has been shown that environmental pollutants suppress different enzyme, vitamins, minerals and other intermediary metabolism, treatment with vitamins, minerals etc. is also performed.

The importance of environmental medicine has been recognized internationally by the formation of similar organizations in Britain, Canada, and Australia.

Because the American Academy of Environmental Medicine and its concepts are new, there understandably has been misunderstanding and misinformation in both lay and medical press which does not fairly represent the position of those practicing this specialty. This brochure will clarify our position and explain the diagnostic and therapeutic techniques which are endorsed by our academy.

AMERICAN ACADEMY OF ENVIRONMENTAL MEDICINE

The American Academy of Environmental Medicine founded in 1965, is an association of physicians interested in clinical aspects of environmental illness.

The Academy is concerned with an adverse host response which is manifested as disease. It often develops in certain individuals after a prolonged or excessive detrimental environmental exposure and an unusual sensitivity and susceptibility to foods, dust, pollens, mold spores, epidermals, chemicals, infection, and endogenous hormones. The result is termed "environmentally-induced" illness.

Specific offending agents to which individuals of all age groups are becoming increasingly susceptible are found in food, clothing, drugs, air, water, as well as in the home, work, and play environment. These exposures can affect any part of the body adversely and are commonly an unsuspected or unrecognized cause of many illnesses. Aware of these factors and proper physician guided manipulation of environmental incitants will improvehealth thus preventing costly medical care.

Acute and/or chronic manifestations of environmental illness are common. Chronic disease of this type is frequently cyclic in nature and can involve multiple organ systems. Infection or diverse physical, emotional, or social stresses are common precipitating and aggravating factors.

The basic concepts and techniques of Environmental Medicine are applicable to many facets of everyday medicine and surgery afford newer and improved methods for diagnosis and treatment.

The environmental approach of scientifically assessing cause and effect has significantly lessened the need for drugs, particularly in relation to vascular, respiratory and mental illnesses. Research in immunology, neurology, nutrition, biochemistry and endocrinology continues to clarify the pathophysiology of many environmentally triggered illnesses and helps to elucidate why the applications of the newer concepts are so successful in the diagnosis and treatment of some previously idiopathic illnesses.

THE AMERICAN ACADEMY OF ENVIRONMENTAL MEDICINE

CONTENTS

A. Diagnostic and Treatment Techniques for Inhalant Sensitivities. . . . 7
    Serial End-Point Titration. 7
    Clinical BioAssay Diagnostic and Therapeutic Testing. 7
    Total IgE (PRIST) and Radio-Allergo-Sorbent Tests (RAST). 9
B. Diagnostic and Treatment Techniques for Food and/or Chemical Sensitivities. 11
    Diet Studies. 11
    Clinical BioAssay Testing and Treatment of Food Sensitivities . . . 12
    BioAssay Testing and Treatment of Chemical Sensitivities. 13
    Treatment Techniques. 13
    Inhalation Challenge Tests. 14
    RAST Tests. 14
C. Comprehensive Environment Controlled Hospital Care 14

A. Diagnostic and Treatment Techniques for Inhalant Sensitivities

1. Serial End-Point Titration (S.E.T.)

The A.A.E.M. approves the teaching and utilization of S.E.T. for diagnosis and treatment for allergens. This technique provides the following advantages:

a) An initial safe and potent starting dose for immunotherapy can be determined quickly. Increments of this starting dilution are administered until such therapy provides relief of symptoms and/or a maximal dose is reached.

b) Seasonal or perennial symptoms can be relieved more rapidly.

c) It is more cost-effective than the use of arbitrary maximum dosage allergy extract therapy.

d) Each antigen can be tested individually and the patient's specific starting treatment dose and dilution determined. The respective doses then can be combined and used as a treatment extract to relieve multiple inhalant sensitivities.

e) The need for adjunctive drug therapy often decreases because of the rapid relief of symptoms and the efficacy of S.E.T.

2. Clinical BioAssay Diagnostic and Therapeutic Testing

The treatment dose is determined by critical observations of the characteristic changes in the wheal produced during intradermal testing with antigens. Sublingual antigen testing is an alternate diagnostic method frequently necessitated for colored and other antigens which cannot be injected intradermally. Symptoms can be induced by intradermal or sublingual tests, with relatively concentrated solution of stock allergy extract antigen. Relief of these symptoms frequently occurs as the patient is tested with weaker 1:5 concentrations of extract. The resultant quantitated amount of antigen is the treatment dose. Advantages for utilizing bioassay testing are as follows:

a) A specific treatment dose can be determined during the initial visit, thus often eliminating the need for weekly office visits to adjust the dose for symptom relief.

b) Multiple allergens needed for seasonal control can be tested individually at one visit, relieving symptoms caused by the specific pollen or mold spore antigen. At the time of testing it can provide immediate symptom relief for some patients during the peak of the pollen season, thus diminishing or eliminating the need for adjunct drug therapy.

c) The symptoms caused by the antigens tested and treated at the time of the initial visit often can be diminished to such a degree that it is then possible to determine the more elusive etiologic factors related to complex multiple sensitivities. After the patient has longer periods of remission, specific causes of symptom flare ups can be detected, evaluated, and treated more rapidly.

d) This method permits fractionation of doses in fragile patients, resulting in a more specific individualized dose for relief of symptoms.

e) This technique can provide an effective treatment dose for some food and chemical sensitivities as well as for pollen, mold or dust sensitivity. Recognition and treatment of the diverse ecological factors by challenging such patients enables the physician to ameliorate or eliminate symptoms which would otherwise not be possible.

f) The treatment dose can be effective when given either sublingually or subcutaneously.

g) When patients' symptoms are not relieved with allergy extracts, it indicates that either the treatment doses of specific allergens need to be adjusted or one has overlooked other incriminating allergens.

h) The effective treatment of allergy extracts can be self-administered, providing rapid and safe relief of symptoms, thus diminishing both expense and inconvenience to the patient.

3. Total IgE (PRIST) and Radio-Allergo-Sorbent Tests (RAST)

While the PRIST test may be informative, it is of limited diagnostic value for some patients who have inhalent sensitivities. This procedure, however, does provide the following information regarding most patients.

a) It suggests the degree of IgE mediation.

b) Symptomatic patients, however, with normal PRIST test levels may be highly food or chemically sensitive. While some patients may benefit from specific immunotherapy for inhalants, foods and chemicals, as well as ecologic environmental control, they may have other immunological abnormalities which require special evaluation.

c) Symptomatic patients with a low PRIST do not necessarily have non-IgE mediated illness. IgE can be released locally in sufficient quantities to initiate a local shock organ response without a significant increase in total serum IgE. A low PRIST also may indicate that only a limited number of antigens may need to be identified and treated.

d) An elevated PRIST may indicate that the utilization of selective RAST screening could be helpful diagnostically and therapeutically.

e) An elevated PRIST in an infant prognosticates an increased prospensity to the development of IgE mediated illness.

It is the position of the A.A.E.M. that the RAST test is safe, specific and can help quantitate some individual specific sensitivities to possible IgE offending allergens. Such determination aids the physician diagnostically and therapeutically, at times enabling the physician to determine the treatment dose with more safety, speed, and efficacy.

Traditional prick, scratch, or intradermal multiple "en masse" antigen testing can be less safe, less sensitive, and much less informative in some patients when compared with serial end-point titration and clinical bioassay testing.

The A.A.E.M. encourages careful individualized re-evaluation and routine monitoring of treatment doses determined by bioassay testing in patients with fluctuating responsive symptoms. A change in the degree of sensitivity of a patient requires appropriate readjustment in the dilution or dosage of extract in order to maintain continuous symptom relief.

The A.A.E.M. stresses the superiority of utilizing specific individualized concentrations of the antigen to which a patient is sensitive rather than the use of arbitrary maximum standard antigen dose therapy for dust, pollens, mold spores, and animal dander.

B. Diagnostic and Treatment Techniques for Food and/or Chemical Sensitivities

The A.A.E.M. endorses the following diagnostic techniques to investigate possible food and chemical sensitivity.

Diet Studies

The following diets, with or without challenges, are approved:

1. Single food elimination diet.
2. Multiple elimination diet.

3. Rotary diversified diet.

4. Total elimination diet.

All such diets should be carefully monitored by physicians to insure proper interpretation as well as adequate nutrition for infants, children, adolescents and adults.

Clinical BioAssay Testing and Treatment of Food Sensitivities

Clinical bioassay testing can serve as a diagnostic, as well as a therapeutic technique.

a) It utilizes either sublingual or intradermal testing to induce symptoms which are usually promptly eliminated or ameliorated after the correct treatment dose is determined.

It provides the following advantages:

1. Convenience because of self-administration.
2. Multiple foods can be individually tested within short periods of time, eliminating the need for prolonged dietary studies.
3. Food immunotherapy raises the patient's tolerance for foods so that the patient is able to eat most foods which previously caused obvious symptoms. This provides better nutrition and a more varied diet.
4. It is a rapid, easy way to treat infants with milk or other food sensitivities, insuring a more nutritious diet during that critical period of growth.

Clinical BioAssay Testing and Treatment of Chemical Sensitivities

1. All patients are first tested to the chemical preservative used in the allergy extracts, the most common being phenol and benzyl alcohol. In the very chemically sensitive patient, glycerine is also tested sublingually. A positive test would elicit symptoms which can be eliminated with a neutralizing or treatment dose.
2. Some patients are so chemically sensitive that they can only tolerate chemically-free allergy extract therapy.
3. Some chemicals can be tested by the sublingual or intradermal bioassay technique.

Treatment Techniques

The following treatment modalities for food and chemical sensitivities are recommended by the A.A.E.M.:

1. Avoidance of symptom-causing foods and/or the utilization of rotary, diversified diet.
2. Treatment doses of food extracts can be administered either by sublingual route or subcutaneous injection when avoidance is impractical or impossible.
3. Patients should avoid known environmental chemical excitants with an attempt to establish a safe oasis within the home.
4. When avoidance of chemical offenders is impossible, chemicals treated by immunotherapy is sometimes essential and beneficial.

5. Symptomatic drug treatment is required only if the above measures are ineffectual for total symptom relief.

Inhalation Challenge Tests

Many patients with bronchial, vascular or cerebral symptoms react to chemical odors requiring diagnostic inhalation challenges. After symptoms are induced, a treatment dose may be determined by either the oral or intradermal bioassay testing technique.

RAST Tests

This test is of value in the IgE-mediated hypersensitivity or anaphylactic-type food reactions. A RAST test for possible anaphylactic food sensitivities can alert a physician and thus prevent a possible serious systemic reaction during intradermal skin testing. The A.A.E.M. approves RAST testing for foods in order to determine the intensity of a type I hypersensitivity. The majority of food and chemical sensitivities are not primarily IgE mediated.

C. Comprehensive Environmental Controlled Hospital Care

A comprehensive environmental control unit is designed to reduce environmental pollutants and other exogenous exposures capable of producing symptoms in susceptible persons. This hospital based program is reserved for challenging complex medical problems, or patients with life threatening symptomatology which has been refractory to other modes of traditional treatment.

The comprehensive environmental control technique has been refined over the past quarter of a century. By allowing patients only tolerated water in a chemically-free environment for a few days, it is possible to observe relief of symptoms in many patients with idiopathic illness. This suggests that food or environmental allergens are probably major factors in the patients' illness. When such patients are challenged with specific individual foods, inhalants, or chemicals, it is then possible to determine more precisely the specific factors responsible for each patient's symptomatology. Such comprehensive environmental evaluations have significantly reduced the necessity of repeated hospitalizations and provided significant physical, emotional, and financial relief for environmentally-ill, recalcitrant patients.

An initial total elimination diet which allows only tolerated water is followed by single food oral challenges with less contaminated organic foods. Similar single food challenges are subsequently made with grocery store foods to determine if there is a chemical contaminate in or on such foods causing reactions which are not noted with organically grown foods.

Avoidance of common environmental, chemical, and food offenders provides for a reduction or cessation of symptoms with a diminished need for medications and hospitalizations.

Once patients are more symptom-free in these special hospital units, they may be challenged by inhalation with common environmental air borne chemicals. If a patient's specific symptoms are induced by blinded or open chemical challenges, this helps to confirm a probable etiology of the patient's complaints.

During hospital diagnostic evaluations, a number of immunological and physiologic parameters are sequentially monitored. Extensive individualized health education regarding practical methods to prevent and treat food and chemically-related illness is detailed during patient's hospitalization.

Analysis of Intermediary Metabolism

It has now been shown that environmental pollutants ultimately suppress many of the biological detoxification systems. They disturb vitamin, mineral, lipid and amino acid metabolism. Therefore we endure measurements of these substance with appropriate replacement therapy.

PUBLISHED RESEARCH

These articles illustrate the safety and efficacy of utilizing the bioassay diagnostic and therapeutic techniques in treating inhalant, food and chemical sensitivities:

Double-blind studies:

1. Miller, J.B., A Double-Blind Study of Food Extract Injection Therapy: A Preliminary Report, Annals of Allergy. 38:183-191, 1977.
2. Rapp, D., Double-Blind Confirmation and Treatment with Milk Sensitivity, Medical Journal of Australia 1:571-2, 1978.
3. Rapp, D., Food Allergy Treatment for Hyperkinesis, Journal of Learning Disabilities, 12, 42-50, 1979.
4. O'Shea, J., Porter, S., Double-Blind Study of Children with Hyperkinetic Syndrome Treated with Multi-Allergen Extract Sublingually. Journal of Learning Disabilities, 14, 189-91, 1981.
5. King, D., Can Allergic Exposure Provoke Psychological Symptoms? A Double-Blind Test. Biological Psychiatry, 16: 3-7, 1982.
6. Mandell, M., Conte, A., The Role of Allergy in Arthritis, Rheumatism, and Polysymptomatic Cerebral, Visceral, and Somatic Disorders: A Double-Blind Study. Journal of International Academy of Preventive Medicine, 5-16, 1982.
7. Rapp, D., Weeping Eyes in Wheat Allergy, Transactions of the American Society of Opthalmologic and Otolaryngologic Allergy, 18 (1), 149-150, 1982.

8. Boris, M., Schiff, M., Weindorf, S., and Inselman, L., Broncho provocation Blocked by Neutralization Therapy. Journal Allergy and Clinical Immunology, 71: 1983: 92.

9. McGovern, J.J., Rapp, D.J., Gardner, R.W., O'Banion, D.R., Peters, P., Painter, K., Percle, G., Double-Blind Studies Support Reliability of Provocative-Neutralization Test, Archives of Otolaryngology (in press)

10. Rea, W.J., Podell, R.N., Williams, M.L., Fenyves, E., Sprague, D.E., and Johnson, A.R., Intracutaneous Neutralization of Food Sensitivity: A Double-Blind Evaluation. Archives of Otolaryngology, April 1984.

Non-double-blind studies:

1. Noon, L.: Prophylactic Inoculation Against Hay Fever. Lancet 1:1572, 1911.

2. Lee, C.H.: Food Desensitization. Buchanan County Med Bull. 25:9, 1961.

3. Morris, David L.: Use of Sublingual Antigen In Diagnosis and Treatment of Food Allergy. Annals of Allergy 27:289, 290, 1969.

4. Pfeiffer, G.O.: Sublingual Procedures. Trans. Am. Soc. Opthal. & Otolaryng. Allergy 11:104, 1970.

5. Rea, W.J., Environmentally Triggered Thrombophlebitis, Annals of Allergy, 37:101-109, 1976.

6. Rea, W.J., Environmentally Triggered Small Vessel Vasculitis, Annals of Allergy, 38:245-51, 1977.

7. Dickey, L.D., Sublingual Use of Allergenic Extracts. Journal of Continuing Education in O.R.L. and Allergy, 1978.

8. Rea, W.J., Bell, I.R., Suits, C.W., et al. Food and Chemical Susceptibility After Environmental Chemical Overexposure: Case Histories, Annals of Allergy, 41:101-10, 1978.

9. Rea, W.J., Environmentally Triggered Cardiac Disease, Annals of Allergy, 40:243-51, 1978.

10. Rea, William J., The Environmental Aspects of Ear, Nose and Throat Disease: Part I. J.C.E.O.R.L. & Allergy, 41 (8/9): 41-54, 1979.

11. Forman, R., A Critique of Evaluation Studies of Sublingual and Intracuheous Provocative Tests for Food Allergy. Medical Hypotheses 7:1019-1027, August 1981.

12. Rea, W.J., Peters, D., Smiley, R., et al. Recurrent Environmentally Triggered Thrombophlebitis: A Five Year Follow-up, Annals of Allergy, 47:338-344, 1981.

13. Lee, L.K., and Kniker, W.T., Skin Endpoint Therapy Superior to Conventional Therapy, Archives of Otolaryngology. December 1982.

14. Podell, R.N., A Critical Review of Published Evaluations of Intracutaheous and Sublingual Provocation and Neutralization. Archives of Clinical Ecology, 1983.

15. Shambaugh, George E., Jr., Serous Otitis: Are Tubes the Answer: American Journal of Otology, Volume 5, Number 1, July 1983.

TEXTBOOKS CLARIFYING ECOLOGICAL PRINCIPLES

Clinical Ecology, Dickey, L.D., Ed., Charles C. Thomas 1976.

Food Allergy, Provocative Testing and Injection Therapy, Miller, J.B., Charles C. Thomas 1972.

Food Allergy, New Prespectives, Gerrard, J.W., Charles C. Thomas 1980.

Clinical Ecology, Bell, I.R., Common Knowledge Press 1982.

Allergy: Including IgE in Diagnosis and Treatment, Johnson, F., Year Book, Medical Publishers 1979.

Otolaryngologic Allergy, King, H.C., Symposia Specialists, Inc. 1981.

Food Allergy, Rinkle, Herbert J., M.D., Randolph, Theron G., M.D., Zeller, Michael, M.D., Chanler, C. Thomas, 1951.

RECOMMENDED FOR LAY READING

Clinical Ecology, Bell, I.R., Common Knowledge Press 1982.

An Alternative Approach to Allergies, Randolph, T.G., Moss, R.W. 1980.

How to Control Your Allergies, Forman, R., Larchmont Press, N.Y.C. 1979.

Allergies and Your Family, Rapp, D.J., Sterling Publishing Co., Inc. 1980.

The Type I/Type II Allergy Relief, Levin, A.S., Zellerbach, M., Jeremy P. Tencher, Inc. Los Angeles, 1983.

Are You Allergic? Crook, William, Prof. Books 5, Jackson, Tennessee.

5-Day Allergy Relief System, Mandell, Marshal; Scanlon, Lynne Waller, N.Y. Pocket Books, 1979.

The Yeast Connection, Wm., Crook, G., M.D., Professional Books, 1983.

Allergy and The Hyperactive Child, Rapp, D.J., Cornerstone Library, Simons and Schuster, 1980.

NEWER INSIGHTS IN MAN'S
IMMUNE RESPONSE TO HIS ENVIRONMENT

Chemical and food sensitivity results in acute and chronic illness involving intolerance of certain foods and chemicals used in the everyday environment. Such sensitivities are not mediated by the same system that causes traditional allergic reactions to pollens, dust, animal dander and molds, but caused by a different malfunction of the immune system which has been termed "immune system dysregulation".

Immune system dysregulation (ISD) can develop over a long period of time or very rapidly. ISD can be triggered by a single serious viral infection, major stress, and fungus infection (particularly candida albicans). Accumulative exposure to toxic chemicals, even at low levels found in our everyday environment or massive chemical exposure also can trigger ISD. Immune system dysregulation often remains undiagnosed, however, because many physicians who are faced with its incredible array of seemingly unrelated symptoms are unfamiliar with the newer available diagnostic methods. A misdiagnosis of stress, or psychosomatic disease, is not uncommon. While medications commonly prescribed for these problems may suppress the symptoms to some extent, they can at times further aggravate the problem without dealing with the underlying disease process. When the immune system is malfunctioning it causes a broad range of symptoms or a reaction to react number of harmless or even beneficial substances entering the body. The malfunction commonly originates with the T cells. When the normal complement of T cells are reduced in number or when their ability to function is impaired, they can no longer adequately control B cell antibody production. Without proper T cell control, the B cells cannot distinguish harmless dust pollen, animal dander or nutritious foods from toxic chemicals or life-threatening bacteria or virus. The actual restoration or normal immune function is long, slow and punctuated by exasperating short-term setbacks. These setbacks are part of the healing process and usually follows a roller coaster pattern. The frequency, duration and severity of setbacks gradually diminishes until symptoms are mild and occur only occasionally.

The Antioxidant Response to the Environment

It is now well documented that pollutants effect the biological detoxification systems. As adaptation or acute toxicological tolerance occurs for example after pollutant exposure to the lung there is damage of the Type I column epithelium. Fibroblast, inflammatory cells and the tougher type II column epithelial cells move in to form a barrier. In addition several metabolic alterations occur after the creation of free radicals. Free radicals will damage the microsomal membrane resulting in a depletion of ATP. This may explain the weakness seen in environmentally sensitive patients. Lipid, glucose and protein metabolism are altered. Detoxifying enzyme systems like the mononamine oxidas, chromium P-450, glucose 6, phosphate dehydrogenase, typsin and chromtypsin systems are damaged. Also the sulfhydryl system is altered. After induction and constant stimulation those systems will become depleted

with resultant end-organ failure. These systems are frequently catalyzed by vitamin and minerals which may also be depleted by pollutants. Once these systems fail to detoxify pollutants one may also then see more immune dysregulation. (1)

Another way that pollutants may cause immune dysregulation is through neural triggering. Here the noxious substances go retrograde up the afferent slow C and rapid A-Delta fibers to the dorsal root ganglion. Substance P and somatostatin are released. Substance P will cause local vasoldilator and vessel leak. Also chemotaxis occurs and leukatriene are released. Non-IgE histamines are triggered. Somatostatin generally attempts to counteract Substance P with dampening of the nerve impulse and may effect T cells. However there is a rapid tachyphiaxis with overriding by Substance P. There is then magnifying of dysfunction by the immune system with such dysregulation. (2,3,4)

Another aspect of the healing process is the experience of withdrawal from previously unrecognized addictions. As in any traditional addiction, the feeling of well-being is maintained only through constant reexposure to the addictive agent. Upon avoidance this feeling of well-being gives way to various symptoms, some of which may be rather severe. This withdrawal may be experienced from a remarkably wide variety of substances including coffee, tobacco, alcoholic beverages, many foods, drugs, and some common chemicals. It is not uncommon, for instance, to find an individual who is addicted to the chemicals in his work environment. An example is the painter who feels unwell on weekends because he is not exposed to the paint fumes to which his addiction goes through withdrawal symptomatology Generally, withdrawal symptoms last for only three to five days and then if the individual can avoid succumbing to exposure to the item, to which there is an addiction, the symptoms will subside. After having abstained for long periods, a formerly addicted individual usually will have immediate and severe symptoms upon reexposure to the addicting agent, whether it be paint, cigarettes or food.

The past 10 years have changed many of our concepts of allergy and immune response. For example, the common consideration of IgG only as blocking ("good") antibody in allergy, and IgE only as a symptom-inducing ("bad") antibody is obsolete. Such a simplistic scenario is too incomplete to explain recently accumulated data concerning complicated interactions among humoral and cellular reactants and the two cell types (helpers and suppressors) that can effect opposite reactions.(5,6) For example, IgG can form immune complexes to produce harmful allergic syndromes, as well as lethal diseases.(7) Conversely, IgE can induce local histamine release which itself can quickly turn off allergic symptoms and stimulate expansion of clones of protective suppressor lymphocytes.(8,9)

Allergy symptoms are mediated by the formation of specific antigen-induced immune complexes rather than by specific antibodies. As

a demonstration of this, symptoms of non-IgE mediated allergy may be produced in some patients by antigen-induced immune complexes, and relieved by antigen injection which induces rapid clearing of these complexes.

It is well-recognized that immune complex-mediated disease can be associated with symptoms in virtually any organ. A classic example is systemic lupus erythematosus.

In allergic patients, antigens complexed with circulating and cell-fixed antibodies activate complement to produce anaphylatoxin-mediated histamine release resulting in the increased capillary permeability which causes the observed allergic symptoms. A recent series of papers by Brostoff et al (7,10) and Paganelli et al(11) confirm the existence in food allergic patients of circulating immune complexes composed of food antigen and a variety of immunoglobulins including IgG, IgA, and IgE.

Matthews and Soothill(12) and Atherton et al(13) have demonstrated complement activation secondary to immune complex mediation in food allergic patients undergoing food challenges with allergenic foods. Minor, Tolber, and Frick(14) also found that immune complexes participate in delayed food allergy. May(15) has similarly demonstrated chronic high background blood levels of histamine in food allergic patients.

Macrophages also participate in the initiation and regulation of immune responses(16) by secreting humoral factors, including some with helper and some with suppressor functions.(5,17) These substances are antigen-specific and genetically restricted.(17,18) Thus, for example, macrophages can secrete specific suppressor and helper factors for ovalbumin just as can ovalbumin-sensitive suppressor and helper T cells.

The symptoms seen in some patients with non-IgE mediated allergy can be caused by transient showers of antigen-antibody complexes: 1) which initiate partial complement activation, 2) which induce anaphylatoxin formation, 3) which leads to release of histamine and other mediators from mast cells and basophils, and 4) which results in allergic edema. The presence, severity, and duration of symptoms is, in part, a function of the level, size, persistence and type of such complexes.

Provocation and neutralization of symptomsmay result from alterations in blood and tissue levels of pathogenic complexes.(20,21) Circulating monocytes and fixed macrophages are important participants in these reactions through removal of immune complexes.(22,23)

In neutralization therapy, a dual therapeutic response occurs consisting of rapid relief in minutes or hours after each subcutaneous and sublingual treatment, and increasing ability to tolerate exposures ("hyposensitization") to the antigen over weeks, months, and years. Rocklin et al(9) and Evans et al(24) have demonstrated that antigen-specific suppressor T cells are induced by repeated injections of antigen. Decreased suppressor activity leads to clinical allergic sensitivity. Measurement of these factors helps in elucidating specific immune dysfunction factors. Stimulation of increased suppressor activity and increased suppressor T cell populations account for much of the long-term improvement in allergic patients on immunotherapy.

Thus, it is well-established that symptoms of allergy can be caused by histamine released from mast cells and basophils by both IgE and non-IgE-mediated mechanisms. These symptoms quickly can be relieved by injecting a quantity of antigen which induces the release of the precise amount of histamine required to turn off further histamine release. Maintenance treatment with these extracts repeatedly stimulates suppressor T cells to release histamine-induced suppressor factor (HSF), further suppressing specific IgE antibody production, resulting in the restoration of the health of environmentally ill patients.

BIBLIOGRAPHY

1. Mustafa, M.G.; Hacker, A.D.; Ospital, J.J.; Hussain, M.Z., and Lee, S.D.: Biochemical Effects of Environmental Pollutants, S.D. Lee (Ed.); Ann Arbor Science Publishers, Michigan.

2. Evans, M.J.; Cabral, L.J.; Stephens, R.J.; and Freeman, G.: Renewal of Alveolar Epithelium in the Rat Following Exposures To Nitrogen Dioxide, Am J. Path, 70(175), 1973.

3. Adamson, I.Y.R. and Bowden, D.H.: The Type II Cell As Progenitor of Alveolar Epithelial Regeneration: A Cytodynamic Study on Mice After Exposure to Oxygen, Lab Invest, 30 (35), 1974

4.Evans, M.J.; Cabral, L.J., Stephens, R.J.; and Freeman, G.: Transformation of Alveolar Type II Cells Type I Cells Following Exposure to Nitrogen Dioxide, Exp. Mol Path, 22 (142), 1975.

5.Herscowitz HB, Pennline KJ, Conrad RE, Ulrich SE, and Gerber HA: Macrophage-Lymphocyte Interactions Mediated by Soluble Factors. Annals of the New York Academy of Sciences 1979; 332-464-81.

6. Farrar JF, Simon PL, Farrar WL, Koopman WJ, and Fuller-Bonar J: Role of Mitogenic Factor, Lumphocyte-activating Factor and Immune Interferron in the Induction of Humoral and Cell-mediated Immunity. Annals of the New York Academy of Sciences December 28, 1979; 332:303-315.

7. Brostoff J, Johns P, and Stanworth DR: Complexed IgE in Atopy. Lancet 1977; 2:741-2.

8. Majno G, Palade GE, and Schoefl GI: Studies on Inflammation. II. The Site of Action of Histamine along the Vascular Tree. A Topographic Study. Journal of Biophysical and Biochemical Cytology 1961;2,607.

9. Rocklin RE, Sheffer AL, Greinedeker DK, and Melmon KL: Generation of Antigen-specific Suppressor Cells during Allergy Desensitization. New England Journal of Medicine 1976; 302:1378-85.

10. Brostoff J, Carini C, Wraith DG, and Johns P: Production of IgE Complexes by Allergen Challenge in Atopic Patients and the Effect of Sodium Cromoglycate. Lancet 1979:1268-70.

11. Paganelli R, Levinsky FJ, Brostoff J, and Wraith DG: Immune Complexes Containing Food Proteins in Normal and Atopic Subjects after Oral Challenge and the Effect of Sodium Cromoglycate on Antigen Absorption. Lancet 1979;1270-71.

12. Matthews TS and Soothill JF: Complement Activation after Milk Feeding in Children with Cow's Milk Allergy. Lancet 1970;2:893.

13. Atherton DJ, Sewell M, Soothill JF, Wells RS: A Double-blind Controlled Cross-over Trial of an Antigen-avoidance Diet in Atopic Eczema. Lancet 1978;1:401.

14. Minor JD, Tolber SG, and Frick OL: Leukocyte Inhibition Factor in Delayed-onset Food Allergy. Journal of Allergy and Clinical Immunology 1980;66(4):314-21.

15. May CD: High Spontaneous Histamine Release in Vitro from Leukocytes of Person Hypersensitive to Food. Journal of Allergy and Clinical Immunology 1976;58:432.

16. Mizel SB: Biochemical and Biological Characterization of Lymphocyte-activating Factor (LAF) produced by the Murine Macrophage Cell Line P 388D1. Annals of the New York Academy of Sciences 1980;332:539-48.

17. Erb P and Feldman M: The Role of Macrophages in the Generation of T-helper Cells. I. The Requirement of Macrophages in Helper Cell Induction and Characteristics of Themacrophage T-cell Interaction. Cellular Immunology 1975;19:356-57.

18. Rich RR, Abramson SL, Eldin MF, Puck JM, and Levy R: Role of Ia-positive Cells in the Induction of Secondary Human Responses to Haptens in Vitro. Journal of Experimental Medicine 1980;152:218s-234s.

19. Kohler, PF: Immune Complexes and Immune Disease. In Middleton E Jr, Reed CE, and Ellis EF (eds):Allergy: Principles and Practice. Saint Louis; the CV Mosby Company, Volume 1, 1978.

20. McGovern JJ Jr., Lazaroni JL, Saifer P, Levin AS, Rapp, DJ, Gardner RW: Clinical Evaluation of the Major Plasma and Cellular Measures of Immunity. Journal of Orthomolecular Psychiatry; 1983;12(1): 12.

21. McGovern JJ, Rapp, DJ, Gardner RW, O'Bannon DR, Peters P, Painter, K, Parcia S: Double-blind Studies Support Reliability of Provocative-neutralization Test. Archives of Otholaryngology 1983.

22. Weigle WO and Dixon FJ: Relationship of Circulating Antigen-antibody Complexes, Antigen Elimination and Complement Fixation in Serum Sickness. Proceedings of the Society for Experimental Biology and Medicine 1958;99:226.

23. Dixon FJ, Vasquez DJ, Weigly WO, and Cochran CC: Immunology and Pathogenesis of Experimental Serum Sickness, in Lawrence HS (ed): Cellular and Humoral Aspects of Hypersensitive States. New York; Hoeber-Harper, 1959.

24. Evans R, Pence H, Kaplan H, and Rocklin RE: The Effect of Immunotherapy on Humoral and Cellular Responses in Ragweed Hayfever. Journal of the National Cancer Institute.

POSITION PAPER COMMITTEE

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APPENDIX 13 - The Conclusions and Recommendations of the Joint Report of the Royal College of Physicians and the British Nutrition Foundation.

Conclusions

1. Reactions of food intolerance have gained increasing recognition in recent years but the lack of adequate scientifically based research and the lack of medical interest has led to the proliferation of organisations, centres and individuals offering advice which has little scientific basis.

2. A wide variety of symptoms have been incorrectly attributed to the effects of foods; even when the attribution is correct, there has been confusion between conditions caused by allergy, enzyme deficiencies, pharmacological reactions, psychological reactions and other mechanisms. Food intolerance can both mimic other conditions and be mimicked by them.

3. No estimate can be made of the prevalence of food intolerance because of a lack of adequate information. With the exception of rare but specific biochemical defects, diagnostic methods still depend on dietary studies or on a psychiatric assessment and are highly subjective.

4. The dietary approach to the management of food intolerance is particularly complex and may lead to nutritional difficulties and social disruption. There are considerable dangers in the unsupervised use of diets, especially for infants and young children.

5. For those patients who react abnormally to components of various foods, there is a need for better access to information on the ingredients of foods beyond what is given on the label.

6. Emotional difficulties are common and may sometimes be secondary to immunological or other types of food reaction. Whatever the aetiology, these patients are often ill and in need of treatment which takes account of their psychological and emotional needs as well as any physical aspects of their food intolerance.

Recommendations

1. The Committee recommends that further efforts should be made to inform the public, the medical and associated professions, industry and government about the nature and prevalence of food intolerance. In furtherance of this recommendation, the Committee is considering the publication of a version of this report to be aimed at the non-scientific reader.

2. There is a need for dietary diagnostic methods to be carried out and interpreted by strict criteria, especially because placebo responses are common. Potential diagnostic pitfalls should be given more publicity among the medical and dietetic professions and the inadequacy of untested methods should be emphasised.

3. Before suggesting that a patient's symptoms may be 'allergic' in origin or require treatment on this basis, it is recommended that doctors should seek and consider the results of methodical investigation, including provocation tests. Treatments which have not been properly evaluated should not be endorsed.

4. Treatment may involve more than one member of a multi-disciplinary team. Expert medical and dietetic advice should be more widely available for both adults and children, and the dietetic approach to the subject should be further studied and evaluated.

5. It is recommended that the feasibility of setting up a central data bank for food product composition be examined. Products which are free of ingredients known to be responsible for intolerance should be registered in the data bank, and doctors and dietitians should have access to it.

6. It is recommended that efforts should be made to obtain support for research into the epidemiological and scientific aspects of food intolerance, including improvement of the experimental design and analysis of results of controlled trials both for diagnosis and treatment.

Targets for Research

While some advances have been made in the understanding of food intolerance and food aversion in the last ten or twenty years, our knowledge of the aetiology of these conditions, of reliable diagnostic methods, and of satisfactory forms of treatment, is still inadequate. It would be impossible to describe all the gaps in our knowledge, but research into the various areas enumerated below appears to be particularly urgent or timely.

1. To define the mechanisms, immunological or non-immunological, by which foods and food additives cause reactions in susceptible individuals; and to assess the prevalence and relative frequency of the different subcategories of food intolerance and food aversion.

2. To define, where possible, the chemical nature of the substances which provoke reactions, whether present in foods or food additives, and to obtain pure preparations of these substances for diagnostic and research purposes.

3. To examine and improve methods for detecting: immunological responses to foods; the release of pharmacological mediators (often not associated with specific immune reactions); and the biochemical abnormalities to be found, especially in patients with metabolic defects, enzyme deficiencies, and migraine.

4. To determine the similarities and differences in symptomatology between patients with food intolerance and with various psychiatric conditions, particularly depression, personality disorder and the eating disorders.

5. To examine the influence of the maternal diet during pregnancy and lactation and the effects of post-natal environmental influences on the immune responses of the infant and the development of food intolerance.

6. To evaluate treatment methods, including: the use of mediator antagonists and other pharmacological approaches; methods for modulating the immune response, including the development of new drugs acting on the mast cells; psychiatric treatment, including pharmacological approaches and psychotherapy; and unorthodox methods of treatment for which unsubstantiated claims have been made.

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APPENDIX 14 - Chapter 7

Ray Jackson - July/85

A Framework for
Preventive Action

FIFTH DRAFT

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ISSUES IN
PREVENTIVE HEALTH CARE

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May 1985

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VII. A FRAMEWORK FOR PREVENTIVE ACTION

That prevention is better than cure is generally agreed. That is, it is better to prevent a disease from happening than to attempt to cure it after the fact -- it is likely to cost less and to result in better quality of life, both before and after. Past that point of agreement, however, one runs into problems of definition. Prevention presumably consists either in doing everything right, from the beginning, or in correcting those things that are wrong before they develop into disasters. The wrong conditions or patterns, then, must in some sense be pathologies that need to be cured. "Curative" medicine will say that curing such things is what it has tried to do all along, wherever it has had the opportunity. If "preventive" is to be a meaningful term for new and different policies, we need some clear and operational definition. Otherwise argument will be endless.

I propose to lay out a framework around which discussion can develop in a consistent fashion. It will be more complex than a simple preventive/curative dichotomy, but may better allow us to move forward, instead of being stalled in language that, because it is too simple, does not help us to see what to do.

The science of genetics provides a convenient starting point. A geneticist speaks of the genome, or collection of genes (structured into chromosomes), as determining the potential for development of an organism, in this case the human being. The outcome is not always the same, the various aspects of the genetic potential being realized as one or another phenotype, depending as the conditions are more or less appropriate during the course of development. Thus the genotype, or genome, may contain the potential for a height of six feet, but poor nutrition through childhood and adolescence may result in an adult phenotype five feet four. A faulty gene, which may be a family trait, may result in a deficiency of lipoprotein receptors in the cells, which in turn sets too high a level of cholesterol circulating in the blood (regardless of diet).(116) Consequently, an unsuspecting male in his early forties may suddenly drop dead from a heart attack when he plays one more game of tennis. The malfunction develops from the interplay of two factors -- genotype, and environment. A preventive policy would therefore be two-pronged, one directed to the individual and one to his/her environment -- physical, biological, social, and economic. Policy directed toward the individual would institute screening programs which would identify the family genetic background as predisposing to hypercholesterolemia and this particular person would be checked at birth for the missing gene. If the fault were present, the individual's program would be corrected through diet and medication (if available). Environment might be adjusted by forbidding violent exercise, or the opportunity to play tennis, though in this case that might be of doubtful value.

The genetic level is only the most basic somatic level. The human being, at any given time, has been formed, structured, or programmed at many levels, any one of which may carry an imprint with the subsequent potential for malfunction under the appropriate exogenous stimulus or stress.

The immune system, for instance, programmed in the womb, with the mother's milk, and through childhood diseases, also comes to be programmed deliberately by vaccination and other immunization procedures as a matter of preventive policy. Breakdown, of a kind, may get programmed in as allergies. The metabolic system and the musculoskeletal systems, similarly, on top of the basic genetic endowment, will be formed and set, pretty well for life, by the nutritive environment from the womb onwards to the end of adolescence. A fat, indulged, child may acquire a population of fat cells that will make his/her adult life an unending struggle with obesity. Early exposure to some alien chemicals, such as pesticides, may create neural damage that only surfaces much later in life, as other systems weaken. Habits acquired, like exercise or the lack of it, or styles of eating, or emotional conditioning, or belief patterns, or simply knowledge acquired (or not) through experience, family environment, and education, all shape the individual as an organism well or poorly equipped to deal with subsequent experience.

Much of the nutritive programming and, indeed, of social and psychological programming used to be embodied in culture and tradition. Today, traditions are in chaos. The modern city is a melting pot of cultures from all over the world, all experimenting with each other's cuisine and lifestyle. Traditions, under the influence of television and film, are evolving rapidly into something else. People no longer grow up in intimate relationship with the same bio-region over generations. In fact, food marketing and food technology have been distancing people farther and farther from the natural environment in which tradition was a useful guide. However, now that we have opened the Pandora's Box of technological progress, we seem to have no choice but to continue down the same road. Now, in place of tradition, and "intuition", we have to rely more and more on clinical tests, biochemical analysis, and scientific research. Preventive care will have to include an increasing component of instrumented testing, and deliberate lifestyle management.

The various levels of programming are not independent, of course. The emotional level, as well as the nutritional level, can shape the response of the immune system to pathogens. The emotional level itself, according to some psychiatrists,(117) can be strongly shaped by the nature of the birth experience, more strongly or deeply than by many subsequent events. Emotional and mental maladaptations can often be expressed in, and anchored in distortions of the musculoskeletal system. The posture may have to be corrected before the emotional tensions can be released. It is probably true, however, that the farther toward the mental end of the spectrum the dysfunctional pattern is centred, i.e. the more the brain is involved, the more susceptible to re-programming that pattern ought to be (e.g. to persuade a person to change lifestyle may be easier than to cure his allergy -- even though many physicians might prefer to deal with the allergy.)

Nor can the analysis separate cleanly between person and environment, for at any given point in time the "person" will embody the programming from previous interaction with the environment. A poor environment can create later problems for itself. A poverty-stricken childhood, or a young adult-hood without work, can sow the seeds of later anti-social behaviour.

Those caveats aside, we can identify three basic thrusts for public policy for preventive action: 1) The formation of healthy and disease-resistant people in the first place, 2) The correction or reprogramming of un-healthy patterns, 3) The regulation and improvement of the environment to minimize un-healthy stresses and impacts.

The first might include the genetic counselling and screening of parents, high quality pre- and post-natal nutrition, avoidance by the mother of smoking, alcohol, and other drugs during pregnancy, a loving and caring family, immunization in childhood against major infections, exercise and sports in schools and, later, training in stress relaxation techniques, and so on.

Ensuring of a sound genetic foundation may include genetic testing of the embryo in the womb, e.g. by amniocentesis, followed by early termination of the pregnancy if a serious defect, such as Tay-Sachs disease, is found to be present. When both parents are carrying a Mendelian recessive gene, giving a 25 per cent probability of a seriously defective child who will not live past the age of 3 or 4, this procedure is welcomed by prospective parents as an alternative to complete abstinence and childlessness. In this sense the end result is pro-life.

The second thrust might include mid-course corrections such as anti-smoking and safe-driving campaigns, clinical testing for nutritionsl balance and general fitness, correction of postural, dental and other chronic defects that can lead to greater troubles, screening for incipient signs of disorder such as arthritic spurs, cholesterol deposition, allergies, headaches, etc, with early identification and correction of the causes; and re-education of parents who are about to launch the next generation. Also under this heading might be included the identification of congenital faults in infants and young children and their correction by surgery, medication, or special diets. (The re-engineering of the genetic structure is speculated about, but is unlikely to be accomplished, except possibly in some cases involving the bone marrow, where it may prove possible to remove some, "infect" it with a transforming virus, and replace it.)(90)

An example of the correction (or compensation) of the genetic fault by early nutrition is phenylketonuria, or PKU, a genetic defect of a liver enzyme needed to metabolize the amino acid phenylalanine. If not corrected very early by special diet, the result is severe mental retardation. Though not common (one in 15 000 births) screening is now almost routine because the test is so easy to do.

An inverse example is rickets, which used to be very common among northern peoples until it was recognized as a vitamin D deficiency. Addition of vitamin D_2 to dairy milk in Quebec in 1969 decreased the childhood incidence by 95 per cent within a single year,(11) but did not eliminate it entirely. It continues at a greatly reduced but non-negligible level, with what remains mostly due to genetically inherited defects in the metabolic system affecting calcium or phosphorus. The example serves to illustrate how genetic factors will become relatively more important among the underlying causes of premature degenerative and chronic disease as other causes are removed.

The third thrust might include attention to traffic safety, reduction of hazards in the workplace, control of pollution and toxic wastes, assurance of high quality fresh food, clean air and water, and the various social aspects of "healthy public policy" as enumerated by Hancock (see Chapt. IV). These would include the reduction of excessive social stresses, such as joblessness, exclusion, insecurity, poverty, and war.

In considering the environment we should not overlook the role of the microbial environment we carry with us. In a sense, the contents of our elimination systems are external to the body, yet over a period of days are in close contact, over an area of skin equivalent to a football field. The populations of microbes - bacteria, fungi, and yeast - in close interrelation with our nutrition and our digestive and other bodily fluids, may be upset by dietary shifts, illness, or medications, and may need re-programming. The intestinal microecology, then, is an example that falls in a borderline category, between environment and the programming of the individual.

A government agency (or a public-spirited private agency) might construct a matrix systematically laying out the various actions of these three types it might undertake or encourage, and assigning priorities among them. Definitions would not be crucial. Who would want to argue, with respect to the surgeon who corrected a congenital defect in a child, whether the act was curative, or preventive? Or, if the physician (or the patient, for that matter) discovers that the cure for a patient's arthritis lies in a change in diet, is he, she, or the patient practising curative or preventive medicine? One is tempted to conclude only that much current practice, with its emphasis on the prescription of palliative drugs, does not deserve the name "curative."

If there are any differences between the preventive approach and the curative approach, they are relative only. The main differences of emphasis are the following:

1) Prevention is concerned with "curing the program" before the fact rather than after the fact of obvious disease (though the definition of "obvious" may present some difficulties).
2) Prevention is concerned with changing the program rather than accepting the program as given and adding medication, or surgery, or whatever.
3) Prevention pays greater attention to the environment (the "public health" component).
4) Prevention is more concerned with subtle, long-term, "undermining" factors affecting health.

In a "program" or lifestyle sense, prevention might be seen as more interventionist. However, for that reason, prevention has to make a greater effort to engage the will of the individual, and stir the individual to self-responsibility. A preventive practitioner does not have the advantage of the "helplessness factor" presented by the sick patient. Thus "preventive practitioner" is almost a contradiction in terms. Initiative and responsibility have to come ultimately from the individual, who may require a preventive guide or adviser.

The role of government is to express the public will and act in the public interest, its main instruments being education/information, economic incentives/penalties, regulation, and scientific research, leaving as much scope as possible for individual choice within that framework.

The general objective of preventive medicine and preventive health care should be ultimately to emancipate people as much as feasible from the medicine system and from dependence on the medical profession and the drug industry. The healthy person is autonomous. However, the framework laid out, and the examples given make it clear that the individual may require plenty of technical help along the way.

APPENDIX 15 a) Labelling Proposal of the Joint Report of the Royal College of Physicians and the British Nutrition Foundation.

APPENDIX: THE PROVISION OF INFORMATION ON FOOD PRODUCTS

When a person is known to be intolerant to identified food(s) or food ingredient(s), these must be avoided. It is relatively easy to avoid such common causes of intolerance as, for example, hen's eggs, cow's milk, fish, chocolate, some cereals, fruits and nuts. However, components of prepared foods cannot be easily avoided unless their presence is made known, and such ingredients as components of cow's milk may be included in prepared foods without being clearly identified.

Most food manufacturers in the UK supply dietitians and clinicians with product composition details on request: some do so routinely. The British Dietetic Association supplies lists of manufactured products which are free from particular components to its members. Label declarations are another source of information, although at present not all components need be specifically declared. It could be argued that the declarations of the content of food additives by reference number rather than by name may also obscure the nature of the additives, but information on these reference numbers is now becoming more widely disseminated[1,2]. As constituents of a food product may change, it is important that those people who are intolerant of certain foods check the label for product composition.

UK Regulations for Labelling Foods

Until 1st January 1983, labelling was controlled through Regulations made in 1970[3] and subsequently amended by a number of Statutory Instruments [4-7]. Since that date 'The Food Labelling Regulations 1980'[8] have largely superseded the Regulations of 1970. They take account of the Food Standards Committee's Second Report on Food Labelling[9] and implement Directives 79/112/EEC on the labelling, presentation and advertising of foodstuffs for sale to the ultimate consumer, and 77/94/EEC on foodstuffs for particular nutritional uses[10].

The general requirements are that all food to which the regulations apply must be marked or labelled with the following information: (a) the name of the food as prescribed by law or its customary name; (b) a list of ingredients in descending order of weight of inclusion; (c) an indication of minimum durability; (d) the name and address of manufacturer, packer or seller within the European Community; (e) particulars of the place of origin of the food if its absence could lead to a purchaser being misled; and (f) instructions for use if their absence could be expected to cause problems.

Additives must be declared within the list of ingredients and in accordance with specific requirements set out in the 1980 Regulations[6].

List of Ingredients

It is permitted to use generic names in accordance with certain provisions; for example, 'cheese' may be used for any type of cheese, hence the product may have come from the milk of cattle, sheep or goats but not be specifically identified as having come from any particular species.

In some cases, origin is also required to be stated, as for example with 'fat'; where descriptive terms 'animal' or 'vegetable' should be added.

Declaration of Additives in the Ingredients List

The declaration of each additive is related to its function as defined by the manufacturer. In some cases, additives have more than one function and then the declaration is made within the category relating to the chief function as determined by the manufacturer. In the UK regulations approximately 270 additives are specifically permitted and the number of names that may appear on the label may be many more if one takes account of synonyms. They include antioxidants, preservatives and colouring agents, among a wide range of ingredients, which, together with other substances such as vitamins and essential nutrients, have as their main roles the maintenance of product quality and the enhancement of the acceptability of the product to the consumer. Depending upon function, some additives need, at present, only be declared by their category and not specifically. These are antioxidants, colours, emulsifiers, emulsifying salts, flavourings, preservatives and stabilisers.

For a second group of additives, the category name must be followed by the specific name or by the EEC number (E number). These are acids, acidity regulators, anti-caking agents, anti-foaming agents, artificial sweeteners, flavour enhancers, flour improvers, gelling agents, glazing agents, raising agents and thickeners. Explanatory information on the E number system is available from the Ministry of Agriculture, Fisheries and Food[1].

Exemptions from Part at least of the Labelling Requirements

Food sold or served in certain conditions need not be labelled as fully as described so far and in particular need not be so specific with respect to additives. Broadly, this refers to foods that are not pre-packed, fancy confectionery products, foods sold at catering establishments, fast foods and small packages where the surface area is less than 10 square centimetres.

Future Regulations on Food Labelling

Further regulations based on the Food Standards *Second Report on Claims and Misleading Descriptions*[11] have been proposed recently, and deal with nutritional claims made for products.

It is proposed that in any ingredients list all additives, except flavourings, should be declared specifically. To facilitate this change, serial numbers have been allotted to many more additives, and these may be used in place of the specific name when a category name is also required to be declared.

APPENDIX 15 b) Labelling Proposal Submitted to the
Committee in Ottawa - March 9, 1985

RESOLUTIONS
ON FOOD COLOURS AND OTHER ADDITIVES AND PESTICIDES

Submitted by the Consumer's Association of Canada
National Health Committee

1982 RESOLUTION

FOOD

1. SPECIFIC FOOD COLOR LABELLING

WHEREAS food coloring is present in many everyday consumer products from food, including breads, fresh fruits, soft drinks, to cosmetics including pill coatings and toothpaste, and such food colorings are becoming more pervasive in all products, and

WHEREAS there are presently 32 different coloring agents approved for use in Canadian foods and medical preparations but labelling requirements do not require that the specific food colorant used be identified but only require a statement that a food colorant is used as an ingredient, and

WHEREAS allergic people tend to be allergic to one specific food color and without specific labelling they are left with the options of not buying any food colorants or taking the risk of consumption, such risk resulting in health costs and loss of productive time to society and sometimes severe medical repercussions to the individual, and

WHEREAS consumers have a right to more information in order to be in control of and responsible for their health; therefore,

BE IT RESOLVED that CAC urge the Minister of Health and Welfare and the Minister of Consumer and Corporate Affairs Canada to amend the Food and Drugs Act and Regulations and to introduce amendments to the Consumer Packaging and Labelling Act and Regulations to require the label to name the specific food colorant in the list of ingredients, either specifically or by way of a publicized code, enabling consumers to use this information necessary to avoid allergic reactions.

Adopted June 1982

- Submitted by the Consumers Association of Canada - National Health Committee

1983 RESOLUTIONS

FOOD

6. SODIUM REDUCTION IN PROCESSED FOODS

WHEREAS hypertension is a major health problem in Canada; and

WHEREAS many patients are ordered or advised by their doctors to reduce or restrict their sodium intake; and

WHEREAS there is evidence to suggest a reduction in the sodium intake from birth will decrease the incidence of hypertension in later life; therefore,

BE IT RESOLVED that CAC urge Health and Welfare Canada and Consumer and Corporate Affairs Canada to encourage food processors to reduce the amounts of sodium compounds added to processed foods.

ADOPTED JUNE 1983

- Submitted by the Consumers Association of Canada - National Health Committee

1983 RESOLUTIONS

FOOD

7. PRESERVATIVES IN PROCESSED FOODS

WHEREAS sodium or sodium compounds are used as preservatives or form part of the processing system for some foods; and

WHEREAS excess use of sodium can lead to health problems for consumers; therefore,

BE IT RESOLVED that CAC urge processors to search for an acceptable preservative or food process which does not involve sodium.

ADOPTED JUNE 1983

- Submitted by the Consumers Association of Canada - National Health Committee

1985 PROPOSED RESOLUTIONS

HEALTH

18. SULFITES, SULFITING AGENTS IN FOOD (a)

WHEREAS sulfites are now in use in restaurants as preservatives to keep salad greens and fresh fruit crisp and attractive, and

WHEREAS varying degrees of sensitivity to sulfiting agents, ranging from minor to fatal reactions, have been reported by persons unknowingly ingesting such agents, and

WHEREAS other safer preservative agents than sulfites are available, and

WHEREAS sulfiting agents also destroy vitamin B-1 in vegetable salads which are normally a significant source of B-1 in the diet; therefore

BE IT RESOLVED that the Consumers' Association of Canada urge Health and Welfare Canada to require restaurants to have notices posted in a prominent place informing customers which foods have received in-house treatment with sulfites.

- submitted by the CAC National Health Committee

1985 PROPOSED RESOLUTICNS

HEALTH

19. SULFITES, SULFITING AGENTS IN FOOD (b)

WHEREAS sulfites are frequently used as preservatives in many foods and drinks, including wine, beer, soft drinks, shrimp, dried fruits, french fries and sausage meat, and

WHEREAS sulfites have been the source of many reported allergic reactions of both minor and life-threatening degree, and

WHEREAS other safer preservative agents are available, which fact makes it inappropriate and irresponsible to use life-threatening sulfiting agents in foods; therefore

BE IT RESOLVED that the Consumers' Association of Canada request Health and Welfare Canada to make it mandatory to include on the label of all package and processed foods a qualitative statement of any sulfite additive, and

BE IT FURTHER RESOLVED that the Consumers' Association of Canada request Health and Welfare Canada to initiate an educational programme to alert consumers to the potential dangers of excessive ingestion of sulfiting agents.

- submitted by the CAC National Health Committee

CAC RESOLUTION 1976 77

SECTION I - THE FOOD CHAIN

1. BANNING OF AMARANTH ARTIFICIAL FOOD COLOURING (RED #2)

WHEREAS recent research has indicated that amaranth artificial food colouring (Red #2) has carcinogenic properties, and

WHEREAS the United States and Russia have banned this colouring; therefore

BE IT RESOLVED that CAC request the Health Protection Branch of Health and Welfare Canada to ban the use of amaranth artificial food colour in Canada.

References: Reaffirmation of B.C.'s resolution on Artificial Food Colourings and Flavourings which passed at 1975 Annual, but with particular concern for the banning of Red #2.

Dr. Theodore Sterling's paper "How Safe Are Safe Household Chemicals", April 1973.

Eating May Be Hazardous to Your Health - by Dr. Jacqueline Verrett.

Newspaper reports on the U.S. FDA ban on Red #2.

Facts obtained from the MARKETPLACE program which looked at the U.S. research, which led to the ban.

- Adopted 1976.

- Submitted by the Consumers Association of Canada - National Health Committee

SECTION I: FOOD

1. SYNTHETIC COLOURS

WHEREAS Amaranth (Red Dye No. 2), Erythrosine, Sunset Yellow FCF, Brilliant Blue FCF, and Tartrazine (Yellow Dye No. 5) are synthetic colours permitted in many of our foods, some of them listed below:

butter
pickes
sherbert
cheese
bread
ice-cream mix
concentrated fruit juice
icing sugar
tomato ketchup
wine
liquer
maraschino cherries

and

WHEREAS scientific evidence indicates that these synthetic colours may be detrimental to health because of a possible link to cancer, and leading authorities recommend a banning of these synthetic colours, and

WHEREAS consumers wishing to avoid these unnecessary synthetic colours cannot do so because the law does not require these additives to be listed in all instances, and

WHEREAS the consumer is not always given a choice of food products with and without synthetic colours, and

WHEREAS consumers have indicated their concern about the unavoidable use of these substances in food (reference tabulation of questionnaire presented at the Home Show); therefore

BE IT RESOLVED that CAC urge Health and Welfare, the Health Protection Branch, and Consumer and Corporate Affairs to consider a ban of synthetic colours in food, and

BE IT FURTHER RESOLVED that CAC request that the burden of proof regarding the safety of additives rest with the manufacturers and that the food industry prove that their additives are safe and useful before they are allowed in our foods, and that these additives be listed on the labels of products.

Adopted in 1977

- Submitted by the Consumers Association of Canada - National Health Committee

1982 RESOLUTION

ENVIRONMENT

6. TOXIC CHEMICALS

WHEREAS the regulatory process currently in place at the federal and provincial levels to monitor the manufacture, use and disposal of toxic chemicals is inadequate and may result in an adverse effect on drinking water supplies, and

WHEREAS the federal government's "Drinking Water Guidelines" have not been adopted by the provinces, and

WHEREAS consumers have a right to safe drinking water supplies; therefore,

BE IT RESOLVED that the CAC urge Health and Welfare Canada and through its provincial associations urge the provincial Departments and Ministries of Environment to ensure safe drinking water supplies for Canadians by strengthening regulatory processes to govern the importation, manufacture, transportation, use and disposal of toxic chemicals.

BE IT FURTHER RESOLVED that the CAC through its provincial associations urge the provincial Departments and Ministries of Environment to adopt the standards for drinking water set out under the federal government's "Drinking Water Guidelines", through provincial regulatory processes, and to urge Health and Welfare Canada to regularly review these standards so that new evidence of the effects of toxic chemicals on the environment and on human health is taken into account.

Adopted June 1982

- Submitted by the Consumers Association of Canada - National Health Committee

1985 PROPOSED RESOLUTIONS

HEALTH

14. NON-MEDICINAL INGREDIENTS (EXCIPIENTS) IN DRUG PRODUCTS (b)

WHEREAS sulfiting agents can trigger life-threatening reactions in sulfite sensitive persons who may be unwittingly treated with drugs containing sulfiting agents, and

WHEREAS other safer preservative agents are available, and

WHEREAS the asthmatic population is particularly sensitive to sulfites but the non-asthmatic person can also suffer a hypersensitivity reaction by ingestion of a sulfiting agent; therefore

BE IT RESOLVED that the Consumers' Association of Canada urge the Health Protection Branch of Health and Welfare Canada to restrict the use of sulfiting agents in drugs - and particularly those designed for the treatment of asthma - to those for which no adequate substitute exists.

- submitted by the CAC National Health Committee

1985 PROPOSED RESOLUTIONS

HEALTH

19. SULFITES, SULFITING AGENTS IN FOOD (b)

WHEREAS sulfites are frequently used as preservatives in many foods and drinks, including wine, beer, soft drinks, shrimp, dried fruits, french fries and sausage meat, and

WHEREAS sulfites have been the source of many reported allergic reactions of both minor and life-threatening degree, and

WHEREAS other safer preservative agents are available, which fact makes it inappropriate and irresponsible to use life-threatening sulfiting agents in foods; therefore

BE IT RESOLVED that the Consumers' Association of Canada request Health and Welfare Canada to make it mandatory to include on the label of all package and processed foods a qualitative statement of any sulfite additive, and

BE IT FURTHER RESOLVED that the Consumers' Association of Canada request Health and Welfare Canada to initiate an educational programme to alert consumers to the potential dangers of excessive ingestion of sulfiting agents.

- submitted by the CAC National Health Committee

1985 PROPOSED RESOLUTIONS

HEALTH

13. NON-MEDICINAL INGREDIENTS (EXCIPIENTS) IN DRUG PRODUCTS (a)

WHEREAS an increasing number of consumers are experiencing sensitivity, varying from minor irritation to death, from excipients (non-medical ingredients) in drug formulations, and

WHEREAS disclosure to physicians and pharmacists by drug manufacturers of all ingredients in all formulations and their listing in the Compendium of Pharmaceuticals and Specialties is purely voluntary; therefore

BE IT RESOLVED that the Consumers' Association of Canada urge the Health Protection Branch of Health and Welfare Canada to ensure that qualitative listings of all ingredients of all drug preparations (both prescription and non-prescription) be required in the labelling and monographs of these products.

- submitted by the CAC National Health Committee

12. PESTICIDES, HERBICIDES, FUNGICIDES AND INSECTICIDES
(Reaffirmation of 1975 resolution)

WHEREAS there is evidence that pesticides, herbicides, fungicides and insecticides are dangerous to health when they are not used in a judicious manner, and

WHEREAS the cumulative effect of these toxins is not yet known, both with respect to human and animal health and the environment, and

WHEREAS the present system of licensing under the Department of Agriculture promotes the use of certain products without necessarily considering the public good; therefore

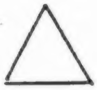
BE IT RESOLVED that CAC request both the Federal and Provincial Governments to urge that the control over herbicides, pesticides, fungicides and insecticides be removed from the Federal and Provincial Departments of Agriculture and placed under an independent agency responsible for Environmental Protection, and

BE IT FURTHER RESOLVED that CAC urge both the Federal and Provincial Governments to ensure that this independent agency be responsible for the safety of all such toxic chemicals before they are licensed for use.

adopted in 1977

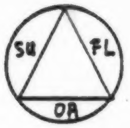
- Submitted by the Consumers Association of Canada - National Health Committee

GRAPHIC SYMBOLS SYSTEM



TRIANGLE AREA - identifies colours added to the food product.

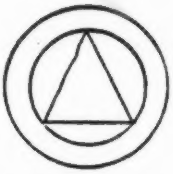
For further identification of origin of the added food colours (natural or synthetic) see "Colour Code System".



CIRCLE SECTIONS - identify if sugar, flavourings or other additives (apart from MSG, nitrites, sulfites or salt) are added.

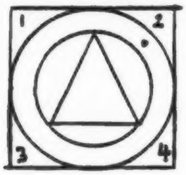
For further identification of these substances see "Colour Code System".

left upper section - SU - sugar
right upper section- FL - flavouring
lower section - OA - other additives (apart from MSG, nitrites, sulfites or salt)



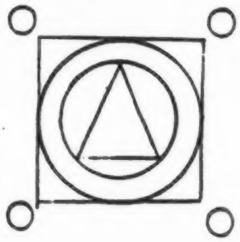
VIOLET RING - indicates the number of calories present.

For further identification of number of calories see "Colour .Code System".



YELLOW AREAS - indicate the presence of the following additives:

section 1. MSG
section 2. nitrites
section 3. sulfites
section 4. salt



DOTS - indicate the presence of common food substances which may cause distress to certain infividuals:

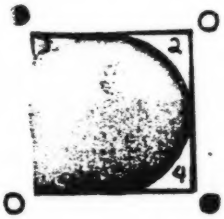
upper left dot - wheat
upper right dot - corn
lower left dot - eggs
lower right dot - milk

COLOUR CODING SYSTEM

COLOUR	INTERPRETATION
White	Nothing added.
Green	Identifies substances appearing in the natural environment. (For example, chlorophyll).
Blue/ Green	Identifies substances natural to the human body and natural environment. (For example, glucose).
Red	Identifies synthetic (artificial) substances. (For example, Yellow Dye No. 5).
Yellow	Identifies the presence of the following additivies which are of frequent concern to the public: MSG, nitrites, sulfites and salt.
Violet (Ring)	Indicates the number of calories present. Light violet - less than 200 cal./100 mg. Medium violet - 200-400 cal./100 mg. Dark violet - over 400 cal./100 mg.
Violet (Dots)	Indicates the addition of common foods known to cause distress to some individuals: wheat, corn, eggs and milk.

For further identification of individual categories of good additives see "Graphic Symbols System".

SYMBOL INTERPRETATION.



red triangle - synthetic colours added

green-blue left upper circle section - sugar added

red right upper circle section - artificial flavourings added

red lower circle section - other artificial food additives(apart from MSG, nitrites, sulfites or salt)

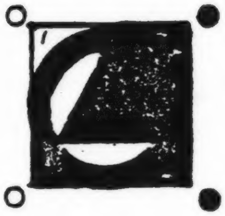
dark violet ring - over 400 calories/100 gm

yellow area no.1 - MSG

yellow area no.3 - sulfites

upper left dot - wheat

lower right dot - milk added



green triangle - natural colours added

red right upper circle sextion - artificial flavourings added

medium violet ring - 200 - 400 cal.loo gm

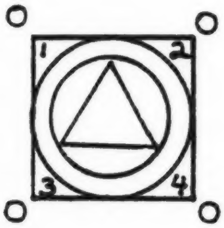
yellow area no 2 - MSG

yellow area no 3 - sulfites

yelow area no 4 - salt

upper right dot - corn added

lower right dot - milk added



White areas only - nothing added

APPENDIX 16

Recommendations from Researchers

In the Field of Environmental Illness

1. Trials to determine the role of diet in the treatment of arthritis.[1]

2. Systematic outcome studies on large, representative samples of environmental patients; rigorous experimental study of the value of treatment techniques in adverse environmental reactions; controlled trials on the use of transfer factor.[2]

3. Research into predictive factors, enzyme studies, diagnostic tests for food allergy; establishment of an environmental unit with epidemiological study of food sensitive patients seen at the unit.[3]

4. Proper trial to include: assessment of extrinsic (allergens, emotional tensions, irritants and infections) and intrinsic (severity of patient's sensitivity to allergen) factors; separation of the effects of the procedure being tested from other factors; homogenous group of patients who have the disorder to be studied but who are otherwise well; description of patient characteristics; identification of risk factors; test and control study groups large enough; patients in each group with comparable characteristics and risk factors; random assignment to study groups.[4]

5. Recognition of different types of adverse reactions in order to obtain a reasonable assessment of the prevalence of food sensitivity in the community; development of an adequate classification system and appropriate terminology in order to collate, on objective basis, the wide variety of disorders which individuals claim are dependent upon their exposure to specific foods.[5]

6. Look at the toxic properties of chemicals because there are many chemically sensitive patients; look at patients with complement problems.[6]

7. Examine the provocation/neutralization testing procedure in a controlled study.[7]

8. Detection of effects of low-level, chronic environmental factors which may have adverse health effects; detection of autonomic hyperactivity, and the factors, both physical and psychological, which control it; mechanisms of the "healing response" of the body, now mislabelled as the "placebo response."[32]

REFERENCES

1. The Arthritis Society of Canada, 1985.
2. Bell IR: 1982 Clinical Ecology. Bolinas, CA: Common Knowledge Press.
3. Brostoff, Jonathan. Department of Immunology, Middlesex Hospital Medical School, London, England.
4. Van Metre Jr TE: Critique of controversial and unproven procedures for diagnosis and therapy of allergic disorders. Ped. Clinics North Amer. 1983; 30: 807-817.
5. Hanson LA, James P, Johansson SGO, Olson RE, White P: 1984 Summary. Nutr. Rev.; 42: 137-139.
6. Bell IR: Department of Psychiatry, Langley Porter Institute, San Francisco, California. Personal communication, 1985.
7. Terr A: Private practice, San Francisco, California. Personal communication, 1985.
8. Jewett DL: Department of Orthopaedic Surgery, Univeristy of California, San Francisco. Personal communication, 1985.